project area east of I–5. Because only west access to the proposed industrial/business park would be provided, the interchange would add minimal capacity to the existing road network east of I–5. The transportation facility proposed under this alternative would improve projected traffic circulation within the industrial/business park by allowing both north and south access to the facility from I–5. However, this alternative design would not significantly improve traffic circulation east of I–5 because traffic would still have to access I–5 from either the 4th Street or 116th Street Northeast interchanges. Because this alternative design would not significantly improve traffic circulation both east and west of I–5, it is not viable and will not be further evaluated in this DEIS.

Other government agencies and members of the public have contributed to the planning and evaluation of the proposals and to the preparation of this DEIS. The scoping process for the Interstate 5/88th Street Northeast Interchange Project EIS began with the publication of a Notice of Intent (NOI) in the May 13, 1991, **Federal Register.** Public scoping meetings were held on May 29 and 30, 1991, at the Tulalip Tribes Reservation and in the neighboring City of Marysville, Washington, to obtain input from Federal, State, local, and tribal agencies and the interested public. Specific issues of public concern were potential traffic impacts on neighboring land uses, regional and community growth, and wetland impact resulting from road and bridge construction. On April 22, 1992 an open house and informational meeting was held in the Pilchuck High School Auditorium in the City of Marysville. The principal issue of public concern at this meeting was the possible siting of a park-and-ride lot on 88th street Northeast immediately east of I–5.

Agencies and individuals are urged to provide comments on this DEIS as soon as possible. All comments received by the dates given above will be considered in preparation of the final EIS.

This notice is published pursuant to Sec. 1503.1 of the Council on Environmental Quality Regulations (40 CFR, parts 1500 through 1508) implementing the procedural requirements of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et. seq.*), Department of Interior Manual (516 DM 1–6) and is in the exercise of authority delegated to the Assistant Secretary—Indian Affairs by 209 DM 8.

Dated: May 7, 1992.

Patrick A. Hayes,

Director, Office of Trust and Economic Development.

[FR Doc. 92–11162 Filed 5–12–92; 8:45 am]

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Wednesday
May 13, 1992

Part III

Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status; Rules

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB52

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Six Plants From the Kokee Region, Island of Kauai, Hawaii

AGENCY: Fish and Wildlife Service, Interior.
ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines six plants, *Chamaesyce halemanui* (no common name (NCN)), *Dubautia latifolia* (NCN), *Poa sandvicensis* (Hawaiian bluegrass), *Poa siphonoglossa (NCN), Stenogyne campanulata* (NCN), and *Xylosma crenatum* (NCN), to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). These species are known only from the Kokee region of the island of Kauai, Hawaii. The six species have been variously affected and are threatened by one or more of the following: Habitat degradation by feral animals; competition for space, light, nutrients, and/or water from alien plant species; road or trail maintenance activities; and an increased potential for extinction and/or reduced reproductive vigor from stochastic events because of the small numbers of extant individuals and their restricted distributions. This rule implements the protection and recovery provisions provided by the Act for these plants.

EFFECTIVE DATE: June 12, 1992.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

FOR FURTHER INFORMATION CONTACT: Joan E. Canfield, at the above address (808/541-2749 or FTS 551-2749).

SUPPLEMENTARY INFORMATION:

Background

The island of Kauai is 627 square miles (sq mi) (1,624 sq kilometers (km)) in area (Armstrong 1983). The island was formed about six million years ago by a single shield volcano, whose caldera was 9 to 12 mi (15 to 20 km) in diameter, the largest caldera in the Hawaiian Islands (Macdonald *et al.* 1983). The remains of this caldera now extend about 10 mi (16 km) in length, forming the Alakai Swamp, an extremely wet, elevated tableland. Faulting and erosion on the western side of the Alakai Swamp have carved the deeply dissected Waimea Canyon, 10 mi (16 km) long and 1 mi (1.6 km) wide, its near-vertical cliffs well over 2,000 feet (ft) (600 meters (m)) high. The distribution of the six species in this final rule centers at Kokee, which lies just above the northern reaches of Waimea Canyon, with the wet Alakai Swamp to the east, steep cliffs of the Na Pali coast to the north, and drier leeward ridges to the west. Kokee is not a strictly defined area; in this document, "Kokee" refers to the boundary of Kokee State Park, roughly 8 sq mi (20 sq km) in area. To most conveniently delimit the greater part of the range of these species, "Kokee region" used here refers to the uplands (above 3,500 ft (1,070 m)) surrounding upper Waimea Canyon: on the west side of Waimea Canyon from Kauhao Valley northeast to the rim of Kalalau Valley, and south to Kohua Ridge on the canyon's east side, an area of about 15 sq mi (40 sq km).

The historical range of the six species in this final rule included leeward slopes on the west side of Waimea Canyon as far south as Lapa Ridge, north to the rim of Kalalau Valley, and on the east side of Waimea Canyon as far south as Olokele Canyon. That area is approximately 9 by 7 mi (14 by 11 km) in size, with plant localities ranging from 2,200 to 3,900 ft (670 to 1,190 m) in elevation. The currently known range of these species differs primarily from the historical range only on the east side of Waimea Canyon, where Kohua Ridge is now the southernmost locality. The present range is circumscribed by an area 5 by 6 mi (8 by 10 km), from 2,500 to 3,900 ft (760 to 1,190 m) in elevation, although most localities are above 3,500 ft (1,070 m). Hence, the range of these species may have been reduced by almost 50 percent.

In the Kokee region, the annual rainfall ranges from about 45 to 80 inches (in) (115 to 200 centimeters (cm)), with a sharp orographic gradient increasing to the east. The average annual temperature is about 62° F (17° C) (Armstrong 1983). These six species are primarily found on well drained, gently sloping to very steep, silty clay loam (Foote *et al.* 1972). The vegetation of the Kokee region is primarily mesic to wet forests dominated by 'ohi'a (*Metrosideros polymorpha*) and koa (*Acacia koa*). Because of the island's age, abrupt topography, and sharp climatic gradient, the native flora of the Kokee region is quite diverse, with a high proportion of locally endemic species.

Discussion of the Six Species

Chamaesyce halemanui was first collected in 1840 on Kauai by the U.S. South Pacific Exploring Expedition (Degener and Degener 1959b). In 1936, Edward Sherff named that specimen *Euphorbia remyi* var. *wilkesii*, and also named specimens from one collection from the Halemanu drainage both *E. halemanui* and *E. remyi* var. *leptopoda* (Koutnik 1987). Otto and Isa Degener and L. Croizat (Degener and Croizat 1936; Degener and Degener 1959a, 1959b) transferred all of those names to the genus *Chamaesyce*. In 1987, Daryl Koutnik reduced the two varieties listed above, and *E. remyi* var. *molesta* (Sherff 1938), to synonymy under *Chamaesyce halemanui*.

All collections and confirmed sightings of this species are from seven areas: Kauhao and Makaha valleys in Na Pali-Kona Forest Reserve; Mahanaloa Valley in Kuia Natural Area Reserve; the Halemanu drainage and near Waipoo Falls and Kokee Ranger Station in Kokee State Park; and Olokele Canyon on privately owned land (Hawaii Heritage Program (HHP) 1990a to 1990f). *Chamaesyce halemanui* is known to be extant at the Kauhao, Makaha, and Halemanu sites, all on State-owned land (HHP 1990c, 1990f; Timothy Flynn, National Tropical Botanical Garden (NTBG), pers. comm., 1990).

Chamaesyce halemanui is a scandent (climbing) shrub in the spurge family (Euphorbiaceae) with stems 3 to 13 ft (1 to 4 m) long. The egg-shaped to inversely lance-shaped leaves are decussate (successive pairs of leaves at right angles to the previous pair). The leaves are 1.6 to 5 in (4 to 13 cm) long and 0.4 to 1.8 in (1 to 4.5 cm) wide, with persistent stipules (small appendages at the base of the petioles (stem of the leaf)). Groups of flowers (cyathia) are in dense, compact, nearly spherical clusters or occasionally solitary in leaf axils. The stems of cyathia are about 0.08 in (2 millimeters (mm)) long, or if solitary, about 0.2 in (5 mm) long. The fruits are green capsules, about 0.1 in (3 mm) long, on recurved stalks, enclosing gray to brown seeds. *Chamaesyce halemanui* is distinguished from closely related species by its decussate leaves, persistent stipules, more compact flower clusters, shorter stems on cyathia, and smaller capsules (Koutnik 1987, Koutnik and Huft 1990).

Chamaesyce halemanui typically grows on the steep slopes of gulches in mesic koa forests at an elevation of 2,160 to 3,600 ft (660 to 1,100 m) (HHP 1990a, 1990e). Associated native species

include 'ohi'a, *Alphitonia ponderosa* (kauila), *Antidesma platyphyllum* (hame), *Coprosma* (pilo), *Diospyros* (lama), *Dodonaea viscosa* ('a'ali'i), *Elaeocarpus bifidus* (kalia), *Pisonia* (papala kepau), *Santalum freycinetianum* ('iliahi), and *Styphelia tameiameiae* (pukiawe) (HHP 1990a, 1990c, 1990e, 1990f; T. Flynn, pers. comm., 1990). Associated alien species include *Aleurites moluccana* (kukui), *Lantana camara* (lantana), *Psidium cattleianum* (strawberry guava), *Rubus argutus* (blackberry), and *Stenotaphrum secundatum* (St. Augustine grass) (HHP 1990e, 1990f; T. Flynn, pers. comm., 1990).

The greatest immediate threat to the survival of *Chamaesyce halemanui* is competition for space and light from alien plants: St. Augustine grass, lantana, and strawberry guava (T. Flynn, pers. comm., 1990; Joel Lau, HHP, pers. comm., 1990). Habitat degradation by feral pigs (*Sus scrofa*) (digging activity which destroys plants and leads to soil erosion and the invasion of alien plants) threatens the Kauhao and Makaha populations of this species (J. Lau, pers. comm., 1990). The 3 known populations, which extend over a distance of about 2 mi (3 km), contain an estimated 50 individuals (HHP 1990c, 1990f; T. Flynn, pers. comm., 1990; Steven Perlman, Hawaii Plant Conservation Center (HPCC), pers. comm., 1990). With such a small population size and restricted distribution, *C. halemanui* faces an increased potential for extinction resulting from stochastic events. This species' limited gene pool also constitutes a serious potential threat because of the possibility of depressed reproductive vigor.

Dubautia latifolia was first collected in the mountains of Kauai by the U.S. Exploring Expedition in 1840 (Carr 1982). Twenty-one years later, Asa Gray (1861) described that specimen as *Raillardia latifolia* (an orthographic error for *Railliardia latifolia*, as Sherff pointed out in 1935), in reference to its broad leaves. In 1936, David Keck transferred the name to the genus *Dubautia*. Sherff published the name *Railliardia latifolia* var. *helleri* in 1952, which Gerald Carr (1985) considered only a phenological variant not worthy of taxonomic recognition. All collections and confirmed sightings of this species are from six areas: Makaha and Awaawapuhi valleys in Na Pali-Kona Forest Reserve, Nualolo Trail and Valley in Kuia Natural Area Reserve, Halemanu in Kokee State Park, along Mohihi Road in both Kokee State Park and Na Pali-Kona Forest Reserve, along the Mohihi-Waialae Trail on Mohihi and Kohua ridges in both Na Pali-Kona Forest Reserve and Alakai Wilderness Preserve, and Kaholuamanu on privately owned land (Carr 1982; HHP 1990h to 1990m; T. Flynn, pers. comm., 1990). *Dubautia latifolia* is known to occur at all but the Halemanu and Kaholuamanu sites (T. Flynn, J. Lau, and S. Perlman, pers. comms., 1990). The species is now known only from State-owned land.

Dubautia latifolia is a diffusely branched, woody vine in the aster family (Asteraceae) with stems up to 26 ft (8 m) long and occasionally up to 3 in (7 cm) in diameter near the base. The paired, egg- to oval-shaped leaves are 3 to 7 in (8 to 17 cm) long and 1 to 3 in (2.5 to 7 cm) wide. The leaves are conspicuously net-veined, with the smaller veins outlining nearly square areas. The distinct petioles are usually about 0.2 in (5 mm) long. The inflorescences comprise a large aggregation of very small, yellowflowered heads. The fruits are dry seeds, usually about 0.2 in (5 mm) long. A vining habit, distinct petioles, and broad leaves with conspicuous net veins outlining squarish areas separate *Dubautia latifolia* from closely related species (Carr 1982, 1985, 1990).

Dubautia latifolia typically grows on gentle to steep slopes on well drained soil in semi-open, diverse montane mesic forest dominated by koa with 'ohi'a, at an elevation of 3,200 to 3,900 ft (975 to 1,200 m) (Carr 1982, 1990; HHP 1988; HPCC 1990a). Less often, this species is found in either closed forest, conifer plantations, or 'ohi'a-dominated forest, and as low as 2,800 ft (850 m) in elevation (HHP 1988, 1990j, 1990k; HPCC 1990a). The most common associated native species are kauila, *Athyrium sandwicensis*, *Bobea* ('ahakea), *Coprosma waimeae* ('olena), *Dicranopteris linearis* (uluhe), *Hedyotis terminalis* (manono), *Ilex anomala* (alea), *Melicope anisata* (mokihana), *Psychotria mariniana* (kopiko), and *Scaevola* (naupaka kuahiwi) (Carr 1982; HHP 1990g, 1990h, 1990j to 1990m). Associated alien species include blackberry, strawberry guava, *Acacia mearnsii* (black wattle), *Acacia melanoxylon* (Australian blackwood), *Erigeron karvinshianus* (daisy fleabane), *Hedychium* (ginger), *Lonicera japonica* (honeysuckle), *Myrica faya* (firetree), and *Passiflora mollissima* (banana poka) (Carr 1982; HHP 1990g, 19901; HPCC 1990d; T. Flynn, pers. comm., 1990).

The greatest immediate threat to the survival of *Dubautia latifolia* is competition from alien plants. Banana poka, a vine now invading four of *D. latifolia's* six diffuse populations, is the most serious threat (Carr 1982, 1985). Blackberry, honeysuckle, black wattle, Australian blackwood, ginger, daisy fleabane, and strawberry guava are other alien species that dominate the habitat of and/or threaten *D. latifolia* (HHP 1990g, 1990h, 1990k, 1990m; HPCC 1990a, 1990d; T. Flynn, pers. comm., 1990). Habitat degradation by feral pigs currently threatens four populations of *D. latifolia* (HHP 1990m; T. Flynn and J. Lau, pers. comms., 1990). Black-tailed deer (*Odocoileus hemionus columbianus*) threaten two populations through trampling that destroys plants and disturbs the ground, leading to soil erosion and favoring the invasion of alien plants; predation by deer is also a probable threat (HHP 1989; HPCC 1990a; S. Perlman, pers. comm., 1990). Vehicle traffic and road maintenance constitute a potential threat to several *D. latifolia* individuals that overhang a State park road. This species suffers from a seasonal dieback that could be a potential threat (Gerald Carr, University of Hawaii, pers. comm., 1990).

Since at least some individuals of *D. latifolia* require cross-pollination, the wide spacing of individual plants (e.g., each 0.3 mi (0.5 km) apart) may pose a threat to the reproductive potential of the species (Carr 1982). The very low seed set noted in plants in the wild indicates a reproductive problem, possibly flowering asynchrony (G. Carr, pers. comm., 1990). Seedling establishment is rather rare in the wild (Carr 1982), presumably due to limited reproduction. The estimated 40 individuals of *D. latifolia* known to be extant are spread over a total distance of about 6.5 by 2.5 mi (10.5 by 4 km) (Carr 1982; HHP 1990h, 1990j; to 1990m; S. Perlman, pers comm., 1990), comprising a limited gene pool that constitutes a potential threat to the species.

Probably the earliest collection of *Poa sandvicensis* was that of Horace Mann and William Brigham from "above Waimea" in 1864 or 1865 (Hillebrand 1888). This species was first described as *Festuca sandvicensis* by H.W. Reichardt in 1878, based on collections from Halemanu. Ten years later, William Hillebrand (1888) described Mann and Brigham's specimen, along with other material, as *Poa longeradiata*. In 1922, Albert Hitchcock combined these and additional collections under the name *Poa sandvicensis*.

All collections and confirmed sightings of this species are from six areas: the rim of Kalalau Valley in Ka Pali Coast State Park; Halemanu and

Kumuwela Ridge/Kauaikinana drainage in Kokee State Park; Awaawapuhi Trail in Na Pali-Kona Forest Reserve; Kohua Ridge/Mohihi drainage in both the Forest Reserve and Alakai Wilderness Preserve; and Kaholuamanu on privately owned land (HHP 1990n, 1990p, 1990q; HPCC 1990b; Hitchcock 1922; T. Flynn, pers. comm., 1990). *Poa sandvicensis* is known to be extant at the Kalalau, Awaawapuhi, Kumuwela/Kauaikinana, and Kohua/Mohihi localities; it is therefore currently known only from State-owned land. Hillebrand's (1888) questionable reference to a Maui locality is most likely an error.

Poa sandvicensis is a perennial grass (family Poaceae) with densely tufted, mostly erect culms (stems) 1 to 3.3 ft (0.3 to 1 m) tall. The short rhizomes (underground stems) form a hardened base for the solid, slightly flattened culms. The leaf sheaths are closed and fused, but may split with age. The toothed ligule (appendage where leaf sheath and blade meet) completely surrounds the culm and has a hard tooth extending upward from the mouth of the sheath. The leaf blades are 4 to 8 in (10 to 20 cm) long, and up to 0.2 in (6 mm) wide. The flowers occur in complex clusters with lower panicle (primary) branches up to 4 in (10 cm) long. The lemmas (inner bracts) have only a sparse basal tuft of cobwebby hairs. The fruits are golden brown to reddish brown, oval grains. *Poa sandvicensis* is distinguished from closely related species by its shorter rhizomes, shorter culms which do not become rush-like with age, closed and fused sheaths, relatively even-edged ligules, and longer panicle branches (O'Conner 1990).

Poa sandvicensis grows on wet, shaded, gentle to usually steep slopes, ridges, and rock ledges in semi-open to closed, mesic to wet, diverse montane forest dominated by 'ohi'a, at an elevation of 3,400 to 4,100 ft (1,035 to 1,250 m) (HHP 1990n to 1990q; HPCC 1990b). Associated native species include koa, kopiko, manono, naupaka kuahiwi, pilo, *Cheirodendron* ('olapa), and *Syzygium sandwicensis* ('ohi'a ha) (HHP 1990n, 1990p, 1990q; HPCC 1990b; T. Flynn, pers. comm., 1990). Associated alien species include blackberry, banana poka, ginger, and daisy fleabane (HHP 1990p; T. Flynn, pers. comm., 1990).

The greatest immediate threat to the survival of *Poa sandvicensis* is competition from alien plants. Daisy fleabane is the primary alien plant threat to the Halalau population of *P. sandvicensis* (T. Flynn, pers. comm., 1990). Blackberry threatens the Awaawapuhi, Kalalau, and Kohua Ridge populations (HHP 1990q; T. Flynn, pers. comm., 1990). Banana poka and ginger also threaten the Awaawapuhi population (HHP 1990p). Erosion caused by pigs currently threatens the Kohua Ridge population, and both pigs and goats (Caprus hircus) (which trample plants, cause erosion, and promote the invasion of alien plants) threaten the Kalalau population (HHP 1990m; HPCC 1990b; T. Flynn and J. Lau, pers. comms., 1990). State forest reserve trail maintenance threatens the trailside Awaawapuhi population (HHP 1990p). While about 40 individuals of *P. sandvicensis* are known from 4 populations spread over a distance of about 5 by 2 mi (8 by 3 km), 80 percent of the plants are concentrated at 1 major site (HHP 1990n, 1990q; T. Flynn, pers. comm., 1990). This species is therefore subject to an increased potential for extinction resulting from stochastic events, because a single event could extirpate 80 percent of the known individuals. The small population size with its limited gene pool also constitutes a serious potential threat.

Poa siphonoglossa was first collected in 1910 by Abbe Urbain Faurie, and was described two years later by E. Hackel (1912). According to Hitchcock (1922), one of the two specimens on which Hackel based his description was actually *poa mannii*. While the localities for Faurie's two specimens are confused, the specimen that Hitchcock designated as the type was most likely collected at an elevation of about 3,000 ft (1,000 m) above Waimea town, possibly near Kaholuamanu (Hitchcock 1922).

All collections and confirmed sightings of *Poa siphonoglossa* are from two sites: Kohua Ridge in Na Pali-Kona Forest Reserve, and near Haholuamanu on privately owned land (HHP 1990r). *Poa siphonoglossa* is only known to be extant on Kohua Ridge, on State-owned land.

An additional *Poa* specimen sharing characteristics of both *P. siphonoglossa* and *P. mannii* was collected in 1988 by David Lorence from Kaulaula Valley in Puu Ka Pele Forest Reserve (David Lorence, NTBG, pers. comm., 1990). Lorence and other local botanical authorities believe that the two species are conspecific, representing different growth stages. Even if the two names are combined, the plant remains extremely rare, since *Poa mannii* has not been collected since 1916 (O'Conner 1990). O'Conner (1990) treats *P. siphonoglossa* and *P. mannii* as distinct species.

Poa siphonoglossa differs from *P. sandvicensis* principally by its longer culms, lack of a prominent tooth on the ligule, and shorter panicle branches. *Poa siphonoglossa* has extensive tufted and flattened culms that cascade from banks in masses up to 13 ft (4 m) long. The naked, rush-like older culms have bladeless sheaths; the sheaths do not split with age. The ligule has no hard tooth. The flat, loosely packed leaf blades are usually less than 4 in (10 cm) long and 0.1 in (3 mm) wide. The primary panicle branches are about 0.1 in (3 cm) long. The lemmas lack cobwebby hairs. The fruits are reddish brown and oval. Short rhizomes, long culms, closed and fused sheaths, and lack of a tooth on the ligule separate *P. siphonoglossa* from *P. mannii* and other closely related species (O'Conner 1990).

Poa siphonoglossa typically grows on shady banks near ridge crests in predominantly native mesic 'ohi'a forest between about 3,300 and 3,900 ft (1,000 to 1,200 m) in elevation (HHP 1990r, : Hitchcock 1922). Associated species include the natives 'a'ali'i, manono, *Melicope* (alani), and *Vaccinium* ('ohelo), and the alien blackberry (HHP 1990r). The population from Kaulaula Valley, whose characteristics are similar to both *P. siphonoglossa* and *P. mannii*, grows on a steep, shady slope in koa forest with occasional 'ohi'a at an elevation of 2,900 ft (890 m) (D. Lorence, pers. comm., 1990). Associated species include pukiawe, *Carex meyenii*, *Carex wahuensis*, and *Wilkesia gymnoxiphium* (iliau) (T. Flynn, pers. comm., 1990).

The primary threat to the survival of *Poa siphonoglossa* is habitat degradation by pigs and deer. The Kohua Ridge population of this species may be at risk due to erosion caused by pigs (J. Lau, pers. comm., 1990), and the presence of both pigs and deer may threaten the Kaulaula population (T. Flynn, pers. comm., 1990). Predation by deer is also a potential threat there. The alien blackberry invading Kohua Ridge constitutes a probable threat to that population (HHP 1990r). *Poa siphonoglossa* (including the Kaulaula population) numbers fewer than 30 known individuals located at 2 populations about 6 mi (10 km) apart (HHP 1990r; T. Flynn, pers. comm., 1990). A limited gene pool and potential for one disturbance event to destroy the majority of known individuals are serious threats to this species.

Stenogyne campanulata was discovered in 1986 by Steven Montgomery on sheer, virtually inaccessible cliffs below the upper rim of Kalalau Valley on Kauai. The species is known only from that single population. In 1989, Stephen Weller and Ann Sakai described the plant as a new

species, naming it for the flowers' bell-shaped calyces. Known only from State-owned land, *S. campanulata* is restricted to Na Pali Coast State Park.

Stenogyne campanulata is a member of the mint family (Lamiaceae), described as a vine with four-angled, hairy stems. The hairy leaves are broadly oval, about 2 in (5 cm) long and 1 in (3 cm) wide. The flowers occur in clusters of about 6 per leaf axil. The very broadly bell-shaped, hairy calyces are about 0.5 in (13 mm) long, with teeth that are 0.1 in (3 mm) long and 0.2 in (5 mm) wide at the base. The petals are fused into a straight, hairy, white tube about 0.5 in (13 mm) long, with short purple lobes. The fruits of this species have not been seen, but the fruit of all other members of this genus are fleshy nutlets. *Stenogyne campanulata* is distinguished from closely related species by its large and very broadly bell-shaped calyces that nearly enclose the relatively small, straight corollas, and by small calyx teeth that are half as long as wide (Weller and Sakai 1990).

Stenogyne campanulata grows on the rock face of a nearly vertical, north-facing cliff at an elevation of 3,560 ft. (1,085 m) (Weller and Sakai 1990; T. Flynn and S. Perlman, pers. comms., 1990). The associated shrubby vegetation includes the native species *Artemisia australis* ('ahinahina), *Lepidium serra* ('anaunau), *Lysimachia glutinosa, Perrottetia sandwicensis* (olomea), and *Remya montgomeryi*, and alien blackberry and daisy fleabane (T. Flynn, pers. comm., 1990).

Habitat degradation by feral goats is the primary threat to the survival of *Stenogyne campanulata* (T. Flynn, pers. comm., 1990). The restriction of this species to virtually inaccessible cliffs suggests that predation by goats may have eliminated it from more accessible locations. Such predation remains a potential threat because goats may limit seedling establishment in more accessible areas and if they reached existing plants, losses could occur (T. Flynn, pers. comm., 1990). Feral pigs have disturbed vegetation in the vicinity of the only known population (T. Flynn, pers. comm., 1990). Erosion caused by goats or pigs exacerbates the potential threat of landslides to this population (T. Flynn, pers. comm., 1990). Daisy fleabane and *Rubus argutus* (blackberry) are the primary alien plants threatening *Stenogyne campanulata* (T. Flynn and S. Perlman, pers. comms., 1990; HPCC 1990c). *Stenogyne campanulata* is estimated to number 50 plants at the very most, all of which are concentrated at a single site (T. Flynn, pers. comm., 1990). The small size of the single known population and its restricted distribution (probably well under 500 sq ft (45 sq m) in area) are serious potential threats to the species. The limited gene pool may depress reproductive vigor, or a single environmental disturbance such as a landslide could destroy all known extant individuals.

Xylosma crenatum was first collected in 1917 by Charles Forbes on the west side of the Waimea drainage basin. However, the collection was misidentified as *Hibiscus waimeae* (HHP 1990s). Over 50 years later (in 1968), Robert Hobdy made the second collection of this plant, along the banks of Mohihi Stream at the edge of the Alakai Swamp. Finally in 1972, Harold St. John recognized the plant as a distinct species, and named it *Antidesma crenatum*, after the rounded teeth along the leaf edges (St. John 1972). In 1976, St. John transferred the name to the genus *Xylosma*.

All collections subsequent to 1968 and confirmed sightings of *Xylosma crenatum* are from two sites: along upper Nualolo Trail in Kuia Natural Area Reserve and along Mohihi Road between Waiakoali and Mohihi drainages in Na Pali-Kona Forest Reserve (HHP 1990s, 1990t; T. Flynn, pers. comm., 1990; Robert Hobdy, State Division of Forestry and Wildlife (DOFAW), pers. comm., 1990). *Xylosma crenatum* is apparently extant only at the latter site (R. Hobdy and J. Lau, pers. comms., 1990). This species is found only on State-owned land.

Xylosma crenatum is a dioecious (unisexual) tree in the flacourtia family (Flacourtiaceae), growing up to 46 ft (14 m) tall, and with dark gray bark. The somewhat leathery leaves are oval to elliptic-oval, about 4 to 8 in (10 to 20 cm) long and 2.5 to 4 in (6.5 to 10 cm) wide, with coarsely toothed edges and moderately hairy undersides. The female flowers (male flowers have not been described) occur in clusters of 3 to 11 per leaf axil. The four oval sepals are about 0.1 in (2.5 mm) long; petals are absent. The young berries are oval to elliptic-oval and about 0.3 in (7 mm) long (mature fruits have not been seen). More coarsely toothed leaf edges and hairy undersides of the leaves distinguish *Xylosma crenatum* from the other Hawaiian member of this genus (St. John 1972, Wagner *et al.* 1990).

Xylosma crenatum is known from diverse koa/'ohi'a montane mesic forest at an elevation of about 3,200 to 3,500 ft (975 to 1,065 m), sometimes along stream banks or within a planted conifer grove (HHP 1990t; St. John 1972; R. Hobdy, pers. comm., 1990). Associated species include the native manono and *Athyrium sandwicensis* and alien strawberry guava (HHP 1990t).

The three historical populations of *Xylosma crenatum* have apparently been reduced to one female individual and no regeneration is evident at the site (J. lau, pers. comm., 1990). However, since half-mature fruits have been observed at least twice on this individual (J. Lau *in litt.*, 1990), successful reproduction may be possible. These immature fruits are either the product of asexual reproduction (apomixis or parthenocarpy) or of sexual reproduction with an as yet undiscovered male plant within pollinating distance. Because no surveys for this species have been conducted in its rather inaccessible habitat, it is hoped that additional research will reveal the presence of more individuals, including male plants. In any case, the total size of the population is probably very limited. Furthermore, a single human-caused or natural environmental disturbance (such as continued bulldozing during maintenance activities along the adjacent State forest reserve road) could easily destroy the only known individual of the species (J. Lau, pers. comm., 1990). *Xylosma crenatum* is also threatened by competition from alien plants, particularly strawberry guava, as well as the conifers dominating the only known site (HHP 1990t). In addition, feral pigs may threaten this species (T. Flynn, pers. comm., 1990).

Previous Federal Action

Federal action on these plant species began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. In that document, *Chamaesyce halemanui* (as *Euphorbia halemanui*), *Dubautia latifolia* (as *D. latifolia* var. *latifolia*), *Poa sandvicensis*, and *Xylosma crenatum* (as *Antidesma crenatum*) were considered to be endangered. On July 1, 1975, the Service published a notice in the Federal Register (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act, and giving notice of its intention to review the status of the plant taxa named therein. As a result of that review, on June 16, 1976, the Service published a proposed rule in the Federal Register (41

FR 24523) to determine endangered status pursuant to section 4 of the Act for approximately 1,700 vascular plant species, including *Chamaesyce halemanui, Dubautia latifolia, Poa sandvicensis,* and *Xylosma crenatum.* The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** publication.

General comments received in response to the 1976 proposal are summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). In 1978, amendments to the Act required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. On December 10, 1979, the Service published a notice in the **Federal Register** (44 FR 70796) withdrawing the portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published updated notices of review for plants on December 15, 1980 (45 FR 82479), and September 27, 1985 (50 FR 39525), including *Chamaesyce halemanui* (as *Euphorbia halemanui*), *Dubautia latifolia, Poa sandvicensis,* and *Poa siphonoglossa* as Category 1 candidates. Category 1 species are those for which the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals. *Xylosma crenatum* was included as a Category 2 candidate species on both notices, meaning that the Service had some evidence of vulnerability, but not enough data to support a listing proposal at the time. In the latest notice of review, published on February 21, 1990 (55 FR 6183), all six of the species included in this final rule were considered Category 1 candidates. *Stenogyne campanulata* was not included in prior notices, since it was not discovered until 1986.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. On October 13, 1983, the Service found that the petitioned listing of these species was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. The finding was reviewed in October of 1984, 1985, 1986, 1987, 1988, and 1989.

On September 26, 1990, the Service published in the **Federal Register** (55 FR 39301) a proposal to list *Chamaesyce halemanui, Dubautia latifolia, Poa sandvicensis, Poa siphonoglossa, Stenogyne campanulata,* and *Xylosma crenatum* as endangered. This proposal was based primarily on information supplied by the Hawaii Heritage Program, reports from the Hawaii Division of Forestry and Wildlife, and observations of botanists and naturalists. The Service now determines *Chamaesyce halemanui, Dubautia latifolia, Poa sandvicensis, Poa siphonoglossa, Stenogyne campanulata,* and *Xylosma crenatum* to be endangered species with the publication of this rule.

Summary of Comments and Recommendations

In the September 26, 1990, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information relevant to a final decision on the listing proposal. The public comment period ended on November 27, 1990. Appropriate State agencies, county and city governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. The original advertising order for the legal notice that the Service is required to publish in a local newspaper was lost, which required the reopening of the comment period. A notice was published in The Garden Island on January 10, 1991, and in the **Federal Register** on December 26, 1990 (55 FR 53014) reopening the comment period until February 25, 1991 and inviting general public comment. Two comments were received, from conservation organizations that offered additional information and, in one case, supported listing the six species as endangered. New information received has been incorporated into this rule.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Chamaesyce halemanui, Dubautia latifolia, Poa sandvicensis, Poa siphonoglossa, Stenogyne campanulata,* and *Xylosma crenatum* should be classified as endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1533) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Chamaesyce halemanui* (Sherff) Croizat and Degener (NCN), *Dubautia latifolia* (A. Gray) Keck (NCN), *Poa sandvicensis* (Reichardt) Hitchc. (Hawaiian bluegrass), *Poa siphonoglossa* Hack. (NCN), *Stenogyne campanulata* Weller and Sakai (NCN), and *Xylosma crenatum* (St. John) St. John (NCN) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

The flora of the Kokee region is considered very vulnerable because of past and present land management practices, including grazing, deliberate alien plant and animal introductions, water diversion, and recreational development (Wagner *et al.*, 1985). Feral animals have made the greatest overall impact, altering and degrading the vegetation and habitats of the Kokee region.

Cattle (*Bos taurus*) were introduced to Kauai by the 1820s and were allowed to run wild (Joesting 1984). Cattle not only feed on native vegetation, but trample roots and seedlings, cause erosion, and promote the invasion of alien plants by creating new sites for colonization, and by spreading seeds in their feces and on their bodies (Scott *et al.*, 1986). In addition, cattle trails provide new routes for feral pigs to expand their range (*e.g.*, into the Alakai Swamp) (Paul Higashino, The Nature Conservancy of Hawaii, pers. comm., 1981). Kokee was leased for cattle grazing in the 1850s (Ryan and Chang 1985). Large cattle ranching operations were underway on both flanks of Waimea Canyon by the 1870s, with many animals wandering into the upper forests. Feral cattle were common at Halemanu in Kokee at this time (Joesting 1984). Concerned over the destruction of upland forests by cattle and goats, Augustus Knudsen, the district forester and cattle rancher on the west side of Waimea Canyon, built a 2 mi (3 km) fence in 1898 near the southwest corner of what became Kokee State Park in 1952 (Daehler 1973b). Knudsen had begun eliminating cattle from the northern (Kokee) side of this boundary in 1882. Three of the six Kokee plant species in this rule historically occurred within 0.5 mi (0.8 km) of this boundary on the Kokee side. Most of the Kokee region, as far southwest as Knudsen's boundary fence, was given forest reserve status (Na Pali-Kona

Forest Reserve) in 1907 to protect the watershed from further erosion by feral animals and to ensure the future water supply for lowland use (Daehler 1973a). At that time, Knudsen described the area south of the boundary fence as grazing land outside any true forest (Daehler 1973b). One of the plants in this rule (*P. siphonoglossa*) occurs in this area, which in 1938 was designated Puu Ka Pele Forest Reserve and described as unsuitable for grazing because of excessive soil erosion (Daehler 1973b). On the east side of Waimea Canyon, efforts were underway by 1904 to eliminate cattle from the uplands, including the Alakai Swamp (Daehler 1973a). In 1916 considerable damage by cattle to the forests around the Alakai Swamp was reported (Daehler 1973a). Stray unbranded ranch stock still roamed the forests of Kokee and Puu Ka Pele in the 1960s (Tomich 1986). The State-owned portion of the Alakai Swamp was designated a Wilderness Preserve in 1964. Today, very few if any cattle remain within the range of the six plant species.

Feral goats have inhabited the drier, more rugged areas of Kauai since the 1820s (Cuddihy and Stone 1990). Like cattle, feral goats consume native vegetation, trample roots and seedlings, cause erosion, and promote the invasion of alien plants (Scott *et al.* 1986). They have denuded many ridges of Waimea Canyon, including areas within the historical distribution of *Dubautia latifolia, Poa sandvicensis,* and *P. siphonoglossa* (Daehler 1973a). During dry periods, goats venture into wet areas, including the Kokee region (Scott *et al.* 1986). They have degraded the forests at the drier edge of the Alakai Swamp, which lie within the present range of the six species in this rule (Scott *et al.* 1986). Although the State attempted to remove goats when the forest reserve was established in 1907, these animals are now managed by the State as a game species, with a limited hunting season (Daehler 1973a, Tomich 1986). Goats are considered a serious threat to the lower and drier outlying sections of the Kokee region (HHP and DOFAW 1989), coinciding roughly with the lower elevation limit of the six species in this rule. The primary threat to *Stenogyne campanulata* is habitat degradation by feral goats (T. Flynn, pers. comm., 1990). While browsing on vegetation, goats disturb the ground, accelerating erosion and creating sites for invasion by more aggressive alien plant species. The restriction of *Stenogyne campanulata* to virtually inaccessible cliffs suggests that predation by goats may have eliminated the species from more accessible locations, as is the case for many rare plants of the Na Pali region. Goats also threaten the Kalalau population of *Poa sandvicensis,* 0.3 mi (0.5 km) from the *Stenogyne* site (T. Flynn, pers. comm., 1990).

Feral pigs have inhabited forests of Kauai for at least 100 years (Cuddihy and Stone 1990). Pigs consume native plants, destroy vegetation by rooting and trampling, cause severe erosion, and spread alien plant seeds in their feces (Scott *et al.* 1986). Pig activity promotes the establishment of alien plants by creating open spaces and increasing soil fertility with their feces; without the disturbance and increase in nutrients, many native species would have an advantage because endemic species often are better adapted to less disturbed sites with poorer soils (Stone 1985).

Because pigs typically expand their range in forested areas by following trails made by other animals or human beings, their ingress into areas of native vegetation has been aided by various human activities (Culliney 1988). Cattle trails helped open the Alakai Swamp to pig traffic (Paul Higashino, The Nature Conservancy, pers. comm., 1981). The sandalwood trade that flourished on Kauai between about 1810 and 1840 created innumerable minor trails, as Hawaiians dragged the logs on their backs down to Waimea on the southern coast from throughout the upland forests (Anonymous 1978, Joesting 1984). To provide irrigation for the expanding sugar cane industry in the lowlands, the extensive Kokee/Kekaha ditch and water diversion system was built in the 1920s. Access roads and trails to and along the ditch and tunnels enabled feral pigs to gain new access to Kokee's native forests (Culliney 1988). The food source provided by plum trees (*Prunus cerasifera* X *P. salicina*) planted in Kokee State Park during the 1930s has attracted greater concentrations of pigs to the general vicinity of several of the species in this rule.

Currently, pigs are recognized as the primary feral animal threat to the upland forests of the Kokee region (HHP and DOFAW 1989), common in both wet and mesic areas. At least five of these species are threatened by habitat degradation by feral pigs. Fresh pig sign was noted in November, 1989, and May, 1990, throughout the area of Kohua Ridge where populations of *Poa sandvicensis, P. siphonoglossa,* and *Dubautia latifolia* are located (HHP 1990m; J. Lau, pers. comm., 1990). At this steep site, erosion caused by pig activity is a present threat to the two *Poa* species (J. Lau, pers. comm., 1990). The extensive erosion scars on lower Kohua Ridge are expanding and gradually moving upslope toward these two species (J. Lau, pers. comm., 1990). Similarly, by increasing erosion, pig activity would exacerbate the potential threat of landslides to the only known population of *Stenogyne campanulata* on the nearly vertical rim of Kalalau (T. Flynn, pers. comm., 1990). Just 0.3 mi (0.5 km) from the *Stenogyne* population, there was considerable pig damage to vegetation adjacent to a population of *Poa sandvicensis* in May, 1990 (T. Flynn, pers. comm., 1990). For *Dubautia latifolia,* pigs constitute a definite threat at the Awaawapuhi population and are known to have caused damage near the Nualolo population (HHP 1989; J. Lau, pers. comm., 1990). Pig sign has been reported from within 200 yards (180 m) of one *D. latifolia* individual in the Mohihi Road population, and from near the Kauhao and Makaha populations of *Chamaesyce halemanui* (T. Flynn and J. Lau, pers. comms., 1990). Pigs are a potential threat to the Kaulaula population of *Poa siphonoglossa* and may also threaten the only known individual of *Xylosma crenatum* (T. Flynn, pers. comm., 1990).

Black-tailed deer were first introduced to the forests of western Kauai in 1961 (Culliney 1988). The estimated 350 animals now occupy dry to mesic, alien-dominated forests up to an elevation of 4,000 ft (1,220 m), including the lower distributional range of these 6 Kokee plant species (Cuddihy and Stone 1990). Like other feral ungulates, deer feed on and trample native vegetation. Deer trails and loss of vegetation from deer foraging activities can cause erosion. Deer are a serious threat to the lower and drier outlying sections of the Kokee region (HHP and DOFAW 1989). Deer also are known to range into the wettest portion of the Kokee area during dry periods, constituting a potential threat to the wet forest habitat (Scott *et al.* 1986). Light to moderate damage by deer was reported from the vicinity of the Nualolo population of *Dubautia latifolia* in 1989 (also a former site of *Xylosma crenatum*) (HHP 1989). Deer occur in the area of the Kaulaula population of *Poa siphonoglossa* and the Makaha population of *Dubautia latifolia,* constituting a potential threat (HPCC 1990a; T. Flynn and S. Perlman, pers. comms., 1990).

In November 1982, Typhoon Iwa caused locally extensive damage to the forest canopy in many parts of Kauai, including numerous areas in the Kokee region. The vicinity of the *Dubautia latifolia* site (and former *Xylosma*

crenatum site) along Nualolo Trail was one such area (R. Hobdy, pers. comm., 1990). Since the Nualolo population of *Xylosma crenatum* was not found during a recent survey of the Kuia Natural Area Reserve, it seems likely that the typhoon destroyed the two 40 ft (12 m) individuals that had constituted that population (HHP 1989). Typhoon Iwa's damage to the forest canopy also greatly exacerbated the invasion of fast-growing, light-loving alien plants, which pose a major threat to the native plants of the Kokee region (Wagner *et al.* 1985). Along Nualolo Trail, banana poka, strawberry guava, and blackberry have shown the greatest growth response, threatening *Dubautia latifolia* and other native species (HHP 1989, 1990j).

Of the six species in this rule, *Dubautia latifolia* is most seriously threatened by competition from alien plants. Primary among these is banana poka, an aggressive vine introduced to Kokee about 50 years ago, now constituting a major infestation (Carr 1985, Smith 1985). Banana poka kills trees by smothering their canopies with its heavy vines. Once the trees fall, the increased sunlight in the understory favors other fast-growing alien species over native plants (Cuddihy and Stone 1990). With its climbing habit, *D. latifolia* occupies a niche similar to banana poka, often growing in close proximity to the aggressive vine (Carr 1982). Banana poka is therefore considered a serious competitor and threat to *D. latifolia* (Carr 1982). Along with banana poka, alien species such as honeysuckle, black wattle, Australian blackwood, ginger, and strawberry guava dominate the habitat of and threaten the Mohihi Road population of *D. latifolia* (HHP 1990g; T. Flynn, pers. comm., 1990). Alien species are also increasing at the site of the Awaawapuhi population of *D. latifolia* (HHP 1990h). Banana poka and blackberry are invading the Mohihi-Waialae Trail and Makaha populations of this species as well, with blackberry overgrowing the latter area (HHP 1990k, 1990m; HPCC 1990a). Over the past 40 years, blackberry has invaded much of the native wet and mesic forests of Kokee, where it forms dense thickets that compete with native understory species (Cuddihy and Stone 1990, Daehler 1973a). Blackberry threatens the Kalalau population of *Poa sandvicensis* (T. Flynn, pers. comm., 1990), and is invading the westernmost section of the Kohua Ridge population of *P. sandvicensis* and an adjacent population of *P. siphonoglossa* (HHP 1990q, 1990r). Banana poka and ginger, as well as blackberry, threaten the Awaawapuhi population of *P. sandvicensis* (HHP 1990p). The Halemanu population of *Chamaesyce halemanui* is threatened by St. Augustine grass, whose thick growth prevents regeneration of this native tree (T. Flynn, pers. comm., 1990). The other two populations of *C. halemanui* are threatened by lantana and strawberry guava (J. Lau, pers. comm., 1990). Alien plants, particularly strawberry guava, are increasing at the only known site of *Xylosma crenatum* (HHP 1990t). Daisy fleabane is the primary alien plant threat to *Stenogyne campanulata* and the Kalalau population of *Poa sandvicensis* (T. Flynn, pers. comm., 1990).

Several potentially threatening alien plant species were originally introduced deliberately for reforestation or timber utilization. These include conifers (such as the grove surrounding the only known *Xylosma crenatum* individual); firetree, planted on Waimea Canyon's eastern drainages; and karaka nut (*Corynocarpus laevigata*), one of the alien species aerially broadcast over the Kokee region in the 1920s (Daehler 1973a, Wagner *et al.* 1985). While these species do not directly threaten the six species in this rule, they may possibly have crowded out former populations, and eventually could invade extant populations. Marijuana (*Cannabis sativa*) is cultivated in the Kokee region, and that activity is considered a management threat to Kuia Natural Area Reserve, where *Chamaesyce halemanui* and *Dubautia latifolia* occur (HHP and DOFAW 1989). Native vegetation is destroyed when areas are cleared for marijuana cultivation. More significantly, other alien species are inadvertently introduced into the forest from soil and other material brought to the site. After the site is abandoned, it forms a locus for the spread of alien species (Medeiros *et al.* 1988).

Construction of water collection and diversion systems that began in the 1920s for the lowland sugar cane industry damaged the vegetation of Kokee (Wagner *et al.* 1985). Since the Kokee ditch and tunnel system and its access roads run through habitat of four of the six species in this rule (particularly *Xylosma crenatum*), it may possibly have destroyed former populations of those species. The ditch system created new routes for the invasion of alien plants and animals into intact native forest (Culliney 1988). Recreational development, concentrated in the 4,640 acre (1,880 hectare) Kokee State Park, has had an equally significant impact on the native vegetation (Wagner *et al.* 1985). Vacation cabins have existed in Kokee for well over a century. The construction and use of an extensive system of hiking, hunting, fishing, and horse trails (45 mi (72 km) in total) has resulted in the direct destruction of some habitat, and has accelerated the rate of erosion and the spread of alien plants and animals enormously (Wagner *et al.* 1985). Three of the species in this rule are currently threatened by road or trail maintenance activities. State forest reserve road maintenance threatens the sole known individual of *X. crenatum*. Freshly bulldozed dirt was noted immediately adjacent to this plant in November, 1989 (J. Lau, pers. comm., 1990). Forest reserve trail maintenance threatens the Awaawapuhi population of *Poa sandvicensis*. The single clump comprising that population had been cut back to the base by trail clearing, but was resprouting as of September, 1989 (HHP 1990p). Several individuals of *Dubautia latifolia* overhang a State park road, and have been injured by passing vehicles. Road maintenance constitutes a potential threat to these plants.

While fire has been suggested as a threat to *Dubautia latifolia* (Center for Plant Conservation 1990, St. John 1981), experienced field botanists with the most direct knowledge of this species believe that the potential for fire within the mesic habitat of this species is quite low (T. Flynn, J. Lau, and S. Perlman, pers. comms., 1990). The same applies to the other five species in this rule.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Illegal collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity and could seriously affect several of these species. For five of the species, disturbance to sites by trampling during recreational use (hiking, for example) could promote erosion and greater ingress by competing alien species. The site of the only known individual of *Xylosma crenatum* is relatively accessible. Overutilization is not a factor for *Stenogyne campanulata*, due to the virtually inaccessible location of the only known population. However, trampling of more accessible nearby areas would promote erosion and increased alien plant invasion. *Chamaesyce halemanui*, *Dubautia latifolia*, *Poa sandvicensis*, and *P. siphonoglossa* are also subject to potential erosion and weed ingress.

C. Disease or Predation

Although there is no evidence of predation on these species, none of them are known to be unpalatable to goats or deer. Predation is therefore a probable threat at sites where those animals have been reported. Predation by goats is considered a probable threat to *Stenogyne campanulata* and *Poa sandvicensis* (T. Flynn, pers. comm., 1990). The restriction of *S. campanulata* to inaccessible cliffs suggests that predation by goats may have eliminated the species from more accessible locations. Predation by deer potentially threatens *Dubautia latifolia* and *Poa siphonoglossa*. No threat of predation has been reported for *Chamaesyce halemanui* or *Xylosma crenatum*. No evidence of disease is known for any of the species in this rule except perhaps *Dubautia latifolia*, where a seasonal blackening and dieback of shoot tips could potentially be caused by a disease; however, it may instead be a natural phenological phenomenon (G. Carr, pers. comm., 1990).

D. The Inadequacy of Existing Regulatory Mechanisms

All of the known populations of the six plant species in this rule are located on State-owned land, either in forest reserves (five species), parks (four species), a natural area reserve (one species), or a wilderness preserve (two species). State regulations prohibit the removal, destruction, or damage of plants found on these lands. However, the regulations are difficult to enforce because of limited personnel. Hawaii's Endangered Species Act (HRS, section 195D–4(a)) states, "Any species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the Endangered Species Act [of 1973] shall be deemed to be an endangered species under the provisions of this chapter***". Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species (HRS, section 195D–5(c)). Funds for these activities could be made available under section 6 of the Federal Act (State Cooperative Agreements). Listing of these six plant species will therefore reinforce and supplement the protection available to the species under State law. The Federal Act will also offer additional protection to the six species, because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy an endangered plant in an area not under Federal jurisdiction in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law.

E. Other Natural or Manmade Factors Affecting its Continued Existence.

The small number of populations and of individual plants of these species increases the potential for extinction from stochastic events. The limited gene pool may depress reproductive vigor, or a single human-caused or natural environmental disturbance could destroy a significant percentage of the individuals of these species. *Xylosma crenatum* epitomizes the problem of small numbers of extant individuals. For this dioecious species, only one female tree is known and no regeneration is evident at the site (J. Lau, pers. comm., 1990). However, since half-mature fruits have been observed at least twice on this individual (J. Lau *in litt.*, 1990), successful reproduction may be possible. These immature fruits are either the product of asexual reproduction or of sexual reproduction with an as yet undiscovered male plant within pollinating distance. *Stenogyne campanulata* numbers approximately 50 plants at the very most, concentrated at a single site (T. Flynn and S. Perlman, pers. comms., 1990). *Poa siphonoglossa* numbers fewer than 30 known individuals at 2 populations (including the Kaulaula population that also exhibits characteristics of *P. mannii*) (HHP 1990r; T. Flynn, pers. comm., 1990). Although about 40 individuals of *Poa sandvicensis* are known from 4 populations, 80 percent of the plants are concentrated at 1 major site (HHP 1990n, 1990q; T. Flynn, pers. comm., 1990). The approximately 50 known individuals of *Chamaesyce halemanui* are distributed fairly evenly between 3 populations, 2 of them reported to include seedlings as well as mature trees (HHP 1990c, 1990f; T. Flynn, pers. comm., 1990). Most *Dubautia latifolia* populations consist of fewer than 6 plants, often widely scattered (e.g., each 0.3 mi (0.5 km) apart). Individual localities are typically 270 to 1,600 sq ft (25 to 150 sq m) in area (Carr 1982). Only about 40 individuals of *D. latifolia* are known to be extant, also comprising a limited gene pool (Carr 1982; HHP 1990g to 1990m; S. Perlman, pers. comm., 1990).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to issue this final rule. Based on this evaluation, the preferred action is to list *Chamaesyce halemanui, Dubautia latifolia, Poa sandvicensis Poa siphonoglossa, Stenogyne campanulata*, and *Xylosma crenatum* as endangered. Total numbers of known individuals of these 6 species range from a low of 1 (*Xylosma crenatum*) to an estimated high of 50 (*Stenogyne campanulata* and *Chamaesyce halemanui*). These species are threatened by one or more of the following: competition from alien plants; habitat degradation by feral pigs, goats, and deer; and trail and road maintenance. Small population size makes these species particularly vulnerable to extinction and/or reduced reproductive vigor from stochastic events. Because these six species are in danger of extinction throughout all or a significant portion of their ranges, they fit the definition of endangered as defined in the Act. Critical habitat is not being designated for these species for reasons discussed in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for the six species in this rule. The publication of descriptions and maps required when critical habitat is designated would increase the degree of threat to these species from possible take or vandalism and therefore could contribute to their decline and increase enforcement problems. The listing of these species as endangered publicizes the rarity of the plants and thus can make them attractive to researchers, curiosity seekers, or collectors of rare plants. As a result of its nearly inaccessible location, *Stenogyne campanulata* does not appear to be threatened by potential vandalism. However, actions of nearby curiosity seekers could result in increased erosion or cause landslides. Because the known distributions of all six species are on State-owned land and there are no known or anticipated Federal actions for the areas in which the plants are located, designation of critical habitat would have no known benefit to these species. All involved parties and landowners have been notified of the general location and importance of protecting the habitat of these species. Protection of the species' habitat will be addressed through the recovery process. Therefore, the Service finds that designation of critical habitat for these species is not prudent at this time because such designation would increase the degree of threat from

vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of these species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a) (2) requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. As none of these species are on Federal land and no Federal activities are currently anticipated in the area, no section 7 consultations or impact on activities of Federal agencies are anticipated as the result of this rule.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general prohibitions and exceptions that apply to all endangered plants. With respect to the six plants from the Kokee region, all trade prohibitions of section 9(a) (2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal with respect to any endangered plant for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale these species in interstate or foreign commerce; remove and reduce to possession any such species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy listed plants on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because the species are not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, room 432–ARLSQ, Arlington, Virginia 22203–3507 (703/358–2104 or FTS 921–2104; FAX 703/358–2281).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited herein is available upon request from the Pacific Islands Office (see **ADDRESSES** section).

Author

The primary author of this final rule is Dr. Joan E. Canfield, Fish and Wildlife Enhancement, Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, P.O. Box 50167, Honolulu, Hawaii 96850 (808/541–2749 or FTS 551–2749).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulations Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under the families indicated, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
*	*	*	*	*	*	
Asteraceae—Aster family:						
*	*	*	*	*	*	
Dubautia latifolia	None	U.S.A. (HI)	E	464	NA	NA
*	*	*	*	*	*	
Euphorbiaceae—Spurge family:						
*	*	*	*	*	*	
Chamaesyce halemanui	None	U.S.A. (HI)	E	464	NA	NA
*	*	*	*	*	*	
Flacourtiaceae—Flacourtia family:						
*	*	*	*	*	*	
Xylosma crenatum	None	U.S.A. (HI)	E	464	NA	NA
*	*	*	*	*	*	
Lamiaceae—Mint family:						
*	*	*	*	*	*	

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Stenogyne campanulata	None	U.S.A. (HI)	E	464	NA	NA
Poaceae—Grass family:						
Poa sandvicensis	Hawaiian bluegrass	U.S.A. (HI)	E	464	NA	NA
Poa siphonoglossa	None	U.S.A. (HI)	E	464	NA	NA

Dated: April 28, 1992.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 92-10984 Filed 5-12-92; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018—AB52

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Geranium Arboreum (Hawaiian Red-Flowered Geranium)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines a plant, *Geranium arboreum* (Hawaiian red-flowered geranium), to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). This species grows primarily in gulches between 5,000 to 7,000 feet (ft) (1,525 to 2,135 meters (m)) in elevation on the northern and western slopes of Haleakala, east Maui, Hawaiian Islands. The greatest immediate threats to the survival of this species are habitat disturbance by domestic and feral cattle and feral pigs, and competition from naturalized, exotic vegetation. This rule implements the protection and recovery provisions provided by the Act for this species.

EFFECTIVE DATE: June 12, 1992.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

FOR FURTHER INFORMATION CONTACT: Derral R. Herbst, at the above address (808/541-2749 or FTS 551-2749).

SUPPLEMENTARY INFORMATION:

Background

Geranium arboreum was first collected by Charles Pickering and William Brackenridge of the U.S. Exploring Expedition on Haleakala, Maui, on February 26, 1841 (Funk 1988a, 1988b). Asa Gray was given the task to prepare a report on all of the foreign plants collected by the expedition. Of the two volumes he produced concerning these specimens, only one was published, and in it *Geranium arboreum* was described as a new species (Gray 1854). In 1956, Degener and Greenwell changed the plant's name to *Neurophyllodes arboreum;* however, Gray's placement of the plant in *Geranium* is accepted by other botanists (Funk 1988b). Today about 300 individuals are known (Funk 1988b); these are found chiefly in the Polipoli Springs and Hosmer Grove—Puu Nianiau areas on the western and northwestern slopes, respectively, of Haleakala. About 250 plants occur on State-owned land within the Xula Forest Reserve, the remainder are mostly in Haleakala National Park. The Nature Conservancy's Waikamoi Preserve, or on Haleakala, Kaonoulu, or Erehwon Ranch lands (Funk 1982, 1988b; Hawaiian Heritage Program 1991).

Geranium arboreum, in the Geranium family, is a much branched, spreading, woody shrub about 6 to 12 ft (1.8 to 3.7 m) tall. The leaves are thin, bright green, broad and rounded at the base, tapering toward the end, and about 1 to 1.5 inches (in) (2.5 to 3.8 centimeters (cm)) long. Each leaf has five to nine main veins, and has edges notched with tooth-like projections. The flower petals are red, about 1 to 1.5 in (2.5 to 3.8 cm) long; the upper three petals are erect, the lower two reflexed, causing the flower to appear curved (Wagner *et al.* 1990). Due to this flower shape, this species is the only one in the genus which appears to be adapted to bird pollination (Funk 1982, 1988b).

The original range and abundance of the species is unknown; however, late 19th and early 20th century collections indicate that it once grew on the southern slopes of Haleakala, and that its distribution on the northern slopes extended beyond its presently known range. Today, isolated populations of *Geranium arboreum* grow in steep, narrow canyons on the north and west outer slopes of Haleakala between 5,000 and 7,000 ft (1,525 to 2,135 m) in elevation in an area that is roughly 9 miles (mi) (14 kilometers (km)) in length, and 0.15 mi (0.25 km) in width. The environment of these gulches is damp, shaded part of the day, and protected, contrasting with the generally drier climate of the surrounding area. The moist habitat apparently is due to fog drip and run-off. The plants appear to obtain a significant amount of their water requirements by "combing" moisture out of the drifting fog (Funk 1982). Vegetation in the ravines is often quite dense, and consists of mostly medium-sized woody shrubs, introduced grasses and weeds, and mixed ferns (Funk 1982). *Geranium arboreum* occurs in small isolated populations in the gulches and is a minor component of the vegetation. The habitat of nearby and surrounding areas is subalpine dry forest or mesic scrub land; a few *Geranium arboreum* individuals grow near areas that have been converted to agricultural uses such as pasture land or experimental tree plots.

The greatest immediate threat to the survival of this species is the encroachment and competition from naturalized, exotic vegetation, chiefly grasses and trees. Soil disturbances, caused by trampling of cattle and rooting by feral pigs, also are a major threat as they destroy plants and facilitate the encroachment of competing species of naturalized plants. Other less important threats include browsing by cattle; fires; and, in the Polipoli Springs area, pollen from exotic pine trees. At certain times of the year, pine pollen completely cover the stigmas of the geraniums, precluding any fertilization by its own species (Funk 1982, 1988b). The small number of individual plants increases the potential for extinction from stochastic events, and the limited gene pool may depress reproductive vigor.

Federal action on this plant began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as

House Document No. 94–51, was presented to Congress on January 9, 1975. In that document, *Geranium arboreum* was considered endangered. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act, and giving notice of its intention to review the status of the plant taxa named therein. As a result of that review, on June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine endangered status pursuant to section 4 of the Act for approximately 1,700 vascular plant species, including *Geranium arboreum*. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** publication.

General comments received in response to the 1976 proposal are summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). In 1978, amendments to the Act required all proposals over two years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. On December 10, 1979, the Service published a notice in the **Federal Register** (44 FR 70796) withdrawing the portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82479), September 27, 1985 (50 FR 39525), and February 21, 1990 (55 FR 6183). In these notices, *Geranium arboreum* was treated as a category 1 candidate for Federal listing. Category 1 taxa are those for which the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. The latter was the case of *Geranium arboreum* because the Service had accepted the 1975 Smithsonian report as a petition. On October 13, 1983, the Service found that the petitioned listing of *Geranium arboreum* was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published in the **Federal Register** on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. The finding was reviewed in October of 1984, 1985, 1986, 1987, 1988, 1989, and 1990.

On January 23, 1991, the Service published in the **Federal Register** (56 FR 2490) a proposal to list *Geranium arboreum* as endangered. This proposal was based primarily on information supplied by a status report and a doctoral dissertation by Evangeline Funk, and observations by botanists. The Service now determines *Geranium arboreum* to be endangered with the publication of this rule.

Summary of Comments and Recommendations

In the January 23, 1991, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information relevant to a final decision on the listing proposal. The public comment period ended on March 25, 1991. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice inviting general public comment was published in the "Maui News" on February 1, 1991. Two letters of comment were received, one from 'The Nature Conservancy, the other from the National Park Service; both supported listing the species. Additional information included in the Park Service's letter has been incorporated into this rule.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Geranium arboreum* should be classified as an endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1533 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). The five factors and their application to *Geranium arboreum* A. Gray (Hawaiian red-flowered geranium) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

It is likely that the entire area supporting *Geranium arboreum* has been grazed by domestic or feral cattle. Ground disturbing activities associated with grazing by cattle or rooting by pigs have degraded the habitat that supports *Geranium arboreum* and may be responsible for some of the reduction in the species' range. When pigs forage, their rooting activity disrupts several inches of the soil surface and uproots plants, especially seedlings. The ground disturbance associated with the activities of cattle and pigs results in the increased erosion of the *Geranium* habitat, and favors the rapid invasion by exotic species. Probably the single greatest threat to the remaining *Geranium arboreum* is competition from naturalized, exotic plants, particularly grasses such as Yorkshire fog (*Holcus lanatus*) and, to a lesser extent, naturalized trees such as wattle (*Acacia mernsii*) and firetree (*Myrica faya*); these exotic species invade and become established in disturbed areas. Introduced grasses occupy sites where *Geranium arboreum* seedlings normally would grow; the grasses form dense sod-like mats, and prevent seedlings of other species from becoming established (Funk 1988b). Fires represent an additional potential threat to the species and its habitat; a fire in the Polipoli Springs area in 1984 destroyed four *Geranium* plants.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Not known to be a factor; nowever, unrestricted scientific collecting or excessive visits resulting from increased publicity could seriously affect the species. *Geranium arboreum* is attractive and could become the subject of increased collection in the future.

C. Disease or Predation

Occasional browsing by cattle has been observed, but it is infrequent and is not considered a major threat. Recently, a naturalized population of rabbits was discovered in the northwest corner of Haleakala National Park, approximately 1 mi (2 km) from a population of *Geranium arboreum*. Although at present the rabbits are selective in their foraging, favoring the shoots and bark of mamane (*Sophora chrysophylla*) and grasses, in the predator-poor upper elevations of Haleakala, a rapid increase in the rabbit population could adversely impact the entire vegetation of the area.

D. The Inadequacy of Existing Regulatory Mechanisms

Most of the known extant *Geranium arboreum* plants grow in the Polipoli Springs area which is within the

boundaries of the State-owned Kula Forest Reserve. State regulations prohibit the removal, destruction, or damage of plants found on these lands. However, due to limited personnel, the regulations are difficult to enforce. There are no State laws or existing regulatory mechanisms at the present time to protect or prevent further decline of this plant on private land. However, Federal listing automatically invokes listing under Hawaii State law, which prohibits taking and encourages conservation by State government agencies. Hawaii's Endangered Species Act (HRS, sect. 195D–4(a)) states, "Any species of wildlife or plant that has been determined to be an endangered species pursuant to the (Federal) Endangered Species Act shall be deemed to be an endangered species under the provisions of this chapter * * *." Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species (section 195D–5(c)). Funds for these activities could be made available under section 6 of the Act (State Cooperative Agreements). Listing of this plant therefore reinforces and supplements the protection available to the species under State law. The Federal Act also will offer additional protection to the species, because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy an endangered plant in an area not under Federal jurisdiction in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law.

A very small proportion of the individuals of *Geranium arboreum* occur on land managed by the National Park Service. Although the Park Service does offer protective management to sensitive resources, the small percentage of plants that potentially receive this management does not substantially reduce the degree of threat faced by the species.

E. Other Natural or Manmade Factors Affecting its Continued Existence

A large part of the annual reproductive effort is effectively lost when pollen released from pine trees in the Polipoli forestry plantings completely covers the stigmas of the *Geranium* growing in that area. The windborne pine pollen forms a mechanical barrier, blocking the reception of *Geranium* pollen, thus reducing the annual reproductive success of this species (Funk 1988b). However, as *Geranium arboreum* has a longer flowering period than do the introduced pine trees, some pollination and resultant seed production does occur.

Approximately 300 individuals remain in about 21 sites, each of which contains between 1 and 25 individuals. The small number of extant plants in these populations makes the species more vulnerable to certain threats. The limited gene pool may result in depressed reproductive vigor, although there is no evidence that there is such a problem today, or a single human-caused or natural environmental disturbance could destroy a significant percentage of the known extant individual plants.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to issue this final rule. Based on this evaluation, the preferred action is to list *Geranium arboreum* as endangered. Only about 300 individuals remain in the wild, and these face threats from habitat degradation and competition from exotic species of plants, as well as other lesser factors. Because this species is in danger of extinction throughout all or a significant portion of its range, it fits the definition of endangered as defined in the Act. Critical habitat is not being designated for this plant for the reasons discussed in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. Such a determination would result in no known benefit to the species. All but a few individuals grow on Federal or State land; government agencies and the few private land owners can be alerted to the presence of the plant without the publication of critical habitat descriptions and maps. The publication of descriptions and maps required when critical habitat is designated would increase the degree of threats to this plant from take or vandalism and, therefore, could contribute to its decline and increase enforcement problems. The listing of this species as endangered publicizes the rarity of the plant and, thus, can make it more desirable to researchers, curiosity seekers, or collectors of rare plants. All involved parties and major land owners have been notified of the general location and importance of protecting the habitat of this species. Protection of the habitat will be addressed through the recovery process and through the section 7 consultation process. Therefore, the Service finds that designation of critical habitat for *Geranium arboreum* is not prudent at this time, because such designation would increase the degree of threat from vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of this species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. Although some individuals occur on land managed by the National Park Service, it is unlikely that actions by this agency would adversely affect this species.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered species set forth a series of general prohibitions and exceptions that apply to all endangered plants. With respect to *Geranium arboreum* all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 apply. These prohibitions, in part, make it illegal with respect to any endangered plant, for any person subject to the jurisdiction of the

United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale this species in interstate or foreign commerce; or to remove and reduce to possession any such species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage or destroy endangered plants on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because the species is not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, room 432–ARLSQ, Arlington, Virginia 22203–3507 (703/358–2104 or FTS 921–2104; FAX 703/358–2281).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Funk, E.J. 1982. Unpublished status survey of *Geranium arboreum* A. Gray (Hawaiian red-flowered geranium). U.S. Fish and Wildlife Service. 34 pp.

Funk, E.J. 1988a. The notes of William Brackenridge made during his Sandwich Islands sojourn 1840–1841. Hawaiian Botanical Society Newsletter 27(1): 3–35.

Funk, E.J. 1988b. Distribution, population structure and reproductive biology of a narrow endemic species: *Geranium arboreum* A. Gray. Doctoral dissertation, University of Hawaii. 200 pp.

Gray, A. 1854. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N. Botany, vol. 15, Phanerogamia, part 1. C. Sherman, Philadelphia. 315 pp.

Hawaii Heritage Program. 1991. Element Occurrence Record for *Geranium arboreum*, PDGER02010.006, dated June 5, 1991. Honolulu. Unpubl. 2 pp.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawaii. Bishop Mus. Spec. Publ. 83. University of Hawaii Press and Bishop Museum Press, Honolulu. 1853 pp.

Author

The primary author of this final rule is Dr. Derral R. Herbst, Fish and Wildlife Enhancement, Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, P.O. Box 50167, Honolulu, Hawaii 96850 (808/541–2749 or FTS 551–2749).

List of Subjects in 50 CFR part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding a new family "Geraniaceae—Geranium family," in alphabetical order, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
*	*	*	*	*	*	
Geraniaceae—Geranium family: *Geranium arboreum*	Hawaiian red-flowered geranium.	U.S.A. (HI)	E	465	NA	NA
*	*	*	*	*	*	

Dated: May 1, 1992.

Bruce Blanchard,

Acting Director, Fish and Wildlife Service.

[FR Doc. 92–10985 Filed 5–12–92; 8:45 am]

BILLING CODE 4310–55–M

50 CFR Part 17

RIN 1018—AB52

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Stenogyne kanehoana (No Common Name), a Hawaiian plant

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines a plant, *Stenogyne kanehoana*, to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). This species is known only from one small population located on the island of Oahu, Hawaii. The greatest immediate threat to the survival of this species is the encroachment and competition from naturalized, exotic vegetation. The extremely small size of the population also is a considerable threat as the limited gene pool may repress reproductive vigor, or a single environmental disturbance could destroy the only known remaining individuals. This rule implements the protection and recovery provisions afforded by the Act for this plant.

EFFECTIVE DATE: June 12, 1992.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

FOR FURTHER INFORMATION CONTACT: Derral R. Herbst, at the above address (808/541–2749 or FTS 551–2749).

SUPPLEMENTARY INFORMATION:

Background

Stenogyne kanehoana was first collected on the east ridge of Puu Kanehoa, Waianae Mountains by Harold St. John in 1934. Otto Degener collected it in the same area in 1939, and, along with Earl Sherff, described the taxon (Sherff 1941), naming it after the type locality. All subsequent collections have been from the same area which is near the summit of the ridge connecting Puu Kanehoa with Puu Hapapa to the north and Puu Kaua to the south, a distance totaling approximately 1.75 miles (2.8 kilometers). Today one population consisting of two to four plants remains under a canopy of mesic forest trees on a ridge leading to the summit of Puu Kanehoa (Center for Plant Conservation (CPC) 1989; Hawaii Heritage Program (HHP) 1988, 1989a, 1989b; Hawaii Plant Conservation Center (HPCC) 1990; Obata 1977; St. John 1981; Joel Lau, HHP, pers. comm., 1989; John Obata, HPCC, pers. comm., 1989; Steven Perlman, HPCC, pers. comm., 1989; Steven Weller, University of California at Irvine, pers. comm., 1989). The plants occur on privately-owned land.

Stenogyne kanehoana is a scandent vine in the mint family (Lamiaceae) with stems weakly 4-angled, hairy, and 3 to 6 feet (1 to 2 meters) long. The leaves are oppositely arranged and are narrowly ovate to oblong-ovate, thin but densely hairy, about 4 inches (in) (10 centimeters (cm)) long and 1.5 in (3.5 cm) wide. The flowers are in clusters of 3 to 6 per leaf axil; the petals are fused into a strongly curved tube about 1 to 1.5 in (2.7 to 4.2 cm) long, white or pale yellow with short pink corolla lobes. The fruit consists of 4 fleshy black nutlets (Weller and Sakai 1990). *Stenogyne kanehoana* is distinguished from the only other member of the genus occurring on Oahu, *S. kaalae*, primarily by the size and color of its flowers. The flowers of *S. kanehoana* are large, white to yellow, and tipped in pink, while those of *S. kaalae* are small and deep purple. *Stenogyne kanehoana* occurs on an open ridge top in mesic forest. Associated species include o'hia (*Metrosideros polymorpha*), koa (*Acacia koa*), 'ie'ie (*Freycinetia arborea*), and uluhe (*Dicranopteris linearis*).

The greatest immediate threat to the survival of this species is habitat degradation and competition for space, water, light, and nutrients by naturalized, alien vegetation (HPCC 1990; Obata, pers. comm., as cited by Weller and Sakai 1990). The extremely small number of individual plants and their restricted distribution increases the potential for extinction from stochastic events. The limited gene pool may depress reproductive vigor, or a single man-caused or natural environmental disturbance could destroy all known individuals. Other potential threats which have been suggested include fire and deforestation (St. John 1981), but, at present, these probably are not serious threats to the species.

Federal government action on this species began with the publication by the Service of an updated notice of review for plants on December 15, 1980 (45 FR 82479). *Stenogyne kanehoana* was included in that publication as a category 1 candidate for Federal listing, meaning that the Service has on file substantial information on biological vulnerability and threats to support preparation of a listing proposal. The species also was included as a category 1 candidate species in the September 27, 1985 (50 FR 39525), and February 21, 1990 (55 FR 6183), notices of review. On January 23, 1991, the Service published in the **Federal Register** (56 FR 2493) a proposal to list *Stenogyne kanehoana* as endangered. This proposal was based primarily on information supplied by the Hawaii Heritage Program, the Center for Plant Conservation, and the observations of botanists and naturalists. The Service now determines *Stenogyne kanehoana* to be an endangered species with the publication of this rule.

Summary of Comments and Recommendations

In the January 23, 1991, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information relevant to a final listing decision. The public comment period ended on March 25, 1991. Appropriate State agencies, county and city governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice inviting general public comment was published in "The Honolulu Advertiser" on February 2, 1991. Two letters of comment were received, both from conservation organizations which supported the listing of the taxon.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Stenogyne kanehoana* should be classified as an endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). The five factors and their application to *Stenogyne kanehoana* Degener and Sherff (no common name) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

Encroachment and competition from naturalized, exotic plants probably is the single greatest threat to this species (HPCC 1990). Koster's curse (*Clidemia hirta*) has recently invaded the *Stenogyne kanehoana* habitat; this aggressive, rapidly spreading bush probably is the single greatest threat to the species (J. Lau, pers. comm., 1989). This species forms a dense understory, shading other plants and hindering plant regeneration. Lantana (*Lantana camara*) also is common in the area along with some Christmas berry (*Schinus terebinthifolius*) (S. Weller, pers. comm., 1989). Christmas berry is a fast-growing alien plant that is able to form dense thickets, displacing other plants. It also may release a chemical that inhibits the growth of other species (Smith 1985). All of the above three species have invaded former native habitat in Hawaii to the exclusion or detriment of the native vegetation. Fires and deforestation have been suggested as potential threats to the *Stenogyne*, but these probably are not serious threats at the present.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Overutilization is not known to be a factor, but unrestricted scientific collecting or excessive visits by individuals interested in seeing rare plants could result from increased publicity and could seriously affect the species. Disturbance to the area by trampling would promote greater ingress by competing exotic species.

C. Disease or Predation

Disease or predation are not known to be factors threatening this species.

D. The Inadequacy of Existing Regulatory Mechanisms

There are no State laws or existing regulatory mechanisms at the present time to protect *Stenogyne kanehoana* or prevent its further decline. However, Hawaii's Endangered Species Act (HRS, section 195D–4(a)) states that "Any species of wildlife or plant that has been determined to be an endangered species

pursuant to the Endangered Species Act (of 1973) shall be deemed to be an endangered species under the provisions of this chapter * * *." Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species (section 195D–5(c)). Funds for these activities could be made available under section 6 of the Federal Act (State Cooperative Agreements). Listing of this species will therefore reinforce and supplement the protection available to the plant under State law. The Federal Act also will offer additional protection to the species, because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy an endangered plant in an area not under Federal jurisdiction in knowing violation of State law or regulation or in the course of any violation of a State criminal trespass law.

E. Other Natural or Manmade Factors Affecting its Continued Existence

The small number of individual plants of this species increases the potential for extinction from stochastic events. The limited gene pool may depress reproductive vigor, or a single man-caused or natural environmental disturbance could destroy the only known extant population of the species. It has been stated that the species is not setting seed (CPC 1989, HPCC 1990) or at least is not successfully reproducing (HHP 1989).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to issue this final rule. Based on this evaluation, the preferred action is to list *Stenogyne kanehoana* as endangered. Only two to four individuals remain in the wild, and these face threats from the encroachment and competition from exotic species of plants, especially lantana and Koster's curse, two particularly aggressive weeds. Because this taxon is in danger of extinction throughout all or a significant portion of its range, it fits the definition of endangered as defined by the Act. Critical Habitat is not being designated for this species for reasons discussed in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. Such a determination would result in no known benefit to the species. The few known individuals are on privately-owned land zoned as conservation land; all involved parties and the landowner have been notified of the general location and importance of protecting this species' habitat. The publication of descriptions and maps required when critical habitat is designated would make *Stenogyne kanehoana* more vulnerable and increase enforcement problems. It would increase the degree of threat to this species from possible take or vandalism because *Stenogyne kanehoana* is an attractive plant and live specimens would be of interest to curiosity seekers or collectors of rare plants. Protection of the species' habitat will be addressed through the recovery process. Therefore, the Service finds that designation of critical habitat for this species is not prudent at this time, because such designation would increase the degree of threat from vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of the species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. No Federal involvement with *Stenogyne kanehoana* is anticipated.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general prohibitions and exceptions that apply to all engangered plants. With respect to *Stenogyne kanehoana*, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 apply. These prohibitions, in part, make it illegal with respect to any endangered plant, for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale this species in interstate or foreign commerce; or to remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy endangered plants on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because the species is not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, room 432–ARLSQ, Arlington, Virginia 22203–3507 (703/358–2104 or FTS 921–2104; FAX 703/358–2281).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

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Sherff, E.E. 1941. Additions to our knowledge of the American and Hawaiian floras. Field Mus. Nat. Hist., Bot. Ser. 22: 407–441.

Smith, C.W. 1985. Impact of alien plants on Hawai'i's native biota. Pp. 180–250 *in*: Stone, C.P., and J.M. Scott (eds.). Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu.

Weller, S.G., and A.K. Sakai. 1990. *Stenogyne*. Pp. 831–843. *in*: Wagner, W.L., D.R. Herbst, and S.H. Sohmer. Manual of the flowering plants of Hawai'i. Bishop Mus. Spec. Publ. 83. University of Hawaii Press and Bishop Museum Press, Honolulu.

Author

The primary author of this final rule is Dr. Derral R. Herbst, Fish and Wildlife Enhancement, Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, P.O. Box 50167, Honolulu, Hawaii 96850 (808/541–2749 or FTS 551–2749).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under the family Lamiaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
*	*	*	*	*	*	
Lamiaceae—Mint family:						
*	*	*	*	*	*	
Stenogyne kanehoana	None	U.S.A. (HI)	E	466	NA	NA
*	*	*	*	*	*	

Dated: April 30, 1992.

Bruce Blanchard,

Acting Director, Fish and Wildlife Service.

[FR Doc. 92–10986 Filed 5–12–92; 8:45 am]

BILLING CODE 4310–55–M

federal register

Wednesday
May 13, 1992

Part IV

Department of Agriculture

Cooperative State Research Service

Special Research Grants; Water Quality Program (Nitrogen Testing) for Fiscal Year 1992; Solicitation of Applications; Notice

DEPARTMENT OF AGRICULTURE

Cooperative State Research Service

Special Research Grants; Water Quality Program (Nitrogen Testing) for Fiscal Year 1992; Solicitation of Applications

Program Description

Purpose

Proposals are invited for competitive grant awards under the Special Research Grants, Water Quality Program for fiscal year 1992. This solicitation announces research problem areas which differ from those announced under the Special Grants Water Quality Program solicitation published in the **Federal Register** on November 19, 1991 (56 FR 58484).

The purpose of the research selected for support in response to this solicitation will be to focus upon soil and plant testing methods and adoption of improved practices to reduce nitrate that leach into water supplies. Proposals submitted in response to this solicitation are to be specifically focused on the evaluation and improvement of current tests for nitrogen availability to crops, as well as the development of new tests, and the adaptability and integration of these tests into farm-scale recommendations for nitrogen management. The targeted and focused Research Problem Areas and the levels of funding amounts and funding periods announced herein differ from those announced in the solicitation published in the **Federal Register** on November 19, 1991. Any proposals submitted under Research Problem Area 110 or 220 in the solicitation published on November 19, 1991, that were not funded but do target soil testing may be submitted for consideration under this solicitation. Maximum total funding amounts and maximum total funding periods for any resulting grants will be less than those funding amounts and funding periods of grants awarded as a result of the solicitation published on November 19, 1991.

The authority for this program is contained in section 2(c)(1)(A) of the Act of August 4, 1965, Public Law 89–106, as amended by the Food, Agriculture, Conservation, and Trade Act of 1990, Public Law No. 101–624 (7 U.S.C. 450i). This program is administered by the Cooperative State Research Service (CSRS) of the U.S. Department of Agriculture (USDA). Under this program, and subject to the availability of funds, the Secretary may award grants for periods not to exceed five years, for the support of research projects to further the program discussed below.

Eligibility

Except where otherwise prohibited by law, proposals may be submitted by State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, private organizations or corporations, and individuals that qualify as responsible grantees under the criteria set forth in 7 CFR 3400.3(b), as amended (56 FR 58146, November 15, 1991). Proposals from scientists at non-United States organizations will not be considered for support.

Available Funding

A total of approximately $700,000 will be available in Fiscal Year 1992 for support of the problem areas listed below. Maximum total funding will be $60,000 per proposal for a funding period of two years. First year funding may not exceed $30,000, and second year funding will be subject to the availability of funds.

Section 734 of Public Law No. 102–142, an Act Making Appropriations for Rural Development, Agriculture and Related Agencies programs for the fiscal year ending September 30, 1992, and for other purposes, prohibits CSRS from using funds available for fiscal year 1992 to pay indirect costs on research grants awarded competitively that exceed 14 per centum of the total direct costs under each award.

Applicable Regulations

Regulations applicable to this program include the following: (a) The administrative provisions governing the Special Research Grants Program, 7 CFR part 3400, as amended (56 FR 58146, November 15, 1991) which set forth procedures to be followed when submitting grant proposals, rules governing the evaluation of proposals and the awarding of grants, and regulations relating to the post-award administration of grant projects; (b) the USDA Uniform Federal Assistance Regulations, 7 CFR part 3015; (c) The USDA Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, 7 CFR part 3016; (d) the Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants), 7 CFR part 3017, as amended; and (e) New Restrictions on Lobbying, 7 CFR part 3018.

Research Problem Areas

General

The purpose of the proposed research to be supported is to enhance the ability to predict nitrogen availability to crops and to encourage the use of soil and plant testing. Proper sampling and testing with appropriate rates of application of commercial fertilizer, manure, cover crops, and other nitrogen sources can lead to the proper use of nitrogen and thus reduce the potential for nitrate contamination of surface and ground waters. Funds will be awarded to support research upon: The evaluation and/or improvement of currently used soil and plant nitrogen testing methods, the development of new and improved methods for such evaluation and testing, and the development of programs to encourage adoption of testing by increased numbers of consultants, producers and commercial applicators.

The following research problem areas will be supported:

1. Evaluate and improve current tests for nitrogen availability to crops. Proposals should address a range of application (soils and crops) of currently used tests. Proposals should also assess the amount of nitrogen not used or needed by the crop and evaluate the potential for leaching of the excess nitrogen into groundwater. Calibration, validation, and comparison of tests may be appropriate to the research.

2. Develop new tests for nitrogen availability to crops and for leaching potential. Proposals should focus on new technology which would improve accuracy, reduce costs, or reduce the time required to complete the test. Research to determine the range of application, validity, leaching potential, and comparison with other tests may be appropriate.

3. Integrate nitrogen tests for soils, plants, manures, and other organic materials into farm-scale recommendations. Proposals should address the region of adaptability and integration of state-of-the-art nitrogen tests into management plans for sustainable farming systems.

4. Incentives and barriers to adoption of improved nitrogen tests. Proposals should address methods to remove barriers and improve the rate of acceptance, adoption, and implementation of improved nitrogen tests.

Programmatic Contacts

For information regarding this program, please contact the following: Dr. Maurice L. Horton, Dr. Berlie L.

Schmidt, Dr. Birl Lowery, Fax No. (202) 401–1706, Phone No. (202) 401–4504.

Proposal Preparation

Application Materials

Copies of this solicitation, the Grant Application Kit, and the Administrative Provisions governing the Special Research Grants Program, 7 CFR part 3400, may be obtained by writing to the address or calling the telephone number which follows: Proposal Services Branch, Awards Management Division, Office of Grants and Program Systems, Cooperative State Research Service, U.S. Department of Agriculture, room 303, Aerospace Center, Washington, DC 20250–2200, Telephone: (202) 401–5048.

Proposal Format

Section 3400.4(c) of the Administrative Provisions governing the Special Research Grants Program sets forth instructions for the preparation of grant proposals. The following requirements are in addition to or deviate from those contained in 7 CFR 3400.4(c). In accordance with 7 CFR 3400.4(c), to the extent that any of the following additional requirements are inconsistent or in conflict with the instructions at 7 CFR 3400.4(c), the provisions of this solicitation shall apply:

Grant application. Each copy of each proposal must include a Form CSRS–661, "Grant Application." One copy of this form, preferably the original, must contain pen-and-ink signatures of the principal investigator(s) and the authorized organizational representative. Be certain to list in Block #8 the number(s) assigned to the Research Problem Area(s) listed above that best describe the greatest emphasis of the proposed research. This will be the basis of grouping proposals and for determining training and experience needed by the peer review panelists who will evaluate each proposal. Form CSRS–661 and other required forms and certifications are contained in the Grant Application Kit.

Abstract and key words. The body of the proposal should be prefaced by an abstract and key words. The abstract is used to classify the proposal. Include factual, concise, and clear statements of proposed research as phrases or sentences. Limit abstract length to 10 lines, or less. Also provide 2 or 4 single or double key words that describe the research emphasis.

Proposal body. The proposal body must include the Title of Project, Objectives, Procedures, Justification (see note below), Literature Review (maximum of 2 pages), Current Research, Facilities and Equipment, Curriculum Vitae of Principal Investigator(s) and other Key Project Personnel (maximum of 2 pages per person), and Collaborative Arrangements (see note below).

Note: For the purpose of this solicitation, the Justification should describe the nitrogen testing and water quality problems, or potential problems, including where they occur and relevance to site-specific, watershed, regional, State, and national size scales. The expected application or use of resulting information should be explained, for example, value to the economy, methods of chemical analyses, need for specific models, basis of recommendations, understanding of processes, or relevancy to a specific soil testing program. In addition, proposers are encouraged to make Collaborative or Cooperative Arrangements with other institutions, organizations or agencies such as the Agricultural Research Service, Soil Conservation Service, Extension Service, U.S. Geological Survey, Environmental Protection Agency, and Economic Research Service through projects, such as Hydrologic Unit Areas, Management Systems Evaluation Areas (MSEA), Demonstration Sites, Farmstead Assessment and Area Studies.

Type and paper size. Type should be no smaller than 12 characters/inch, single-spaced on one side of 8½" × 11" paper. Total length of the proposal shall not exceed 20 pages, excluding forms (i.e., cover page, budget form, certifications).

Reduction by photocopying or other means for the purpose of meeting above stated page limits is not permitted. Attachments of appendices are not permitted. Proposals which do not fall within the guidelines of this solicitation will be eliminated from the competition and will be returned to the applicant as stated in Section 3400.14 of the Administrative Provisions governing the Special Research Grants Programs (7 CFR part 3400).

Budget Form CSRS–55. A copy of Form CSRS–55, along with instructions for completing it, is included in the Grant Application Kit. Applicants should note the special instructions shown below when completing Form CSRS–55:

Item D., "Nonexpendable Equipment." Applicants are strongly discouraged from requesting CSRS funds for the purchase of items of equipment under proposals submitted in response to this solicitation.

Item F., "Travel." The type and extent of travel and its relationship to project objectives should be described and justified. It should be noted that the terms and conditions of any grant awarded under this program will require Principal Investigators to participate in at least one annual regional or national research reporting, evaluation and planning workshop or conference, for the purpose of interstate, interagency and interdisciplinary coordination in this Federal-State jointly planned water quality program. Funds may be requested under this budget category for these workshop/conference costs.

Item I., "All Other Direct Costs." Subawards are to be shown on each budget sheet of the primary budget. Subawardee budgets should be provided on separate forms in the same detail. Proposed subawardees are strongly discouraged from requesting CSRS funds for the purchase of items of equipment under proposals submitted in response to this solicitation.

Item K., "Indirect Costs." The recovery of indirect costs under this program may not exceed the lesser of the grantee institution's official negotiated indirect cost rate or the equivalent of 14% of total direct costs. This limitation also applies to the recovery of indirect costs under any subawardee or subcontract budget.

Proposal Submission

What to Submit

Submit one (1) original and eight (8) unbound copies securely stapled in upper left corner. This number of copies is necessary to permit thorough, objective peer evaluation of all proposals received before funding decisions are made.

All copies of a proposal must be mailed in one package. Every effort should be made to ensure that the proposal contains all pertinent information when initially submitted.

Where and When to Submit

All proposals submitted through the regular mail must be postmarked by June 22, 1992, and must be sent to the following address: Proposal Services Branch, Awards Management Division, Office of Grants and Programs Systems, Cooperative State Research Service, U.S. Department of Agriculture, room 303, Aerospace Center, Washington, DC 20250–2200, Telephone: (202) 401–5048.

Hand delivered proposals must be submitted by June 22, 1992, to an express mail or courier service or brought to the following address (note that the zip code differs from that above): Proposal Services Branch, Awards Management Division, Office of Grants and Programs Systems, Cooperative State Research Service, U.S. Department of Agriculture, room 303, Aerospace Center, 901 D Street, SW., Washington, DC 20024, Telephone: (202) 401–5048.

Proposal Review, Evaluation, and Disposition

Review and Evaluation

Proposals will be evaluated for merit by a review group of scientists and technical specialists qualified in nitrogen chemistry and the use of nitrogen in sustainable agricultural systems.

The following review criteria will be used in lieu of those which appear in § 3400.15 of the Administrative Provisions governing the Special Research Grants Programs (7 CFR part 3400):

Review criteria	Maximum score
Importance of the Problem	
—Clear statement of the proposed research	40
—Importance of the research to production agriculture	
—Potential impact on water quality	
—Relevant related literature and/or research	
Scientific and Technical Quality	30
—Clear, concise and achievable objectives	
—Technical soundness of procedures	
—Feasibility of attaining objectives	
Ability to Achieve Objectives	20
—Necessary facilities, resources and personnel available	
—Resources requested are essential to conduct of research	
—Budget appropriate for proposed research	
—Adequate training and experience of investigators	
Technology Transfer	10
—Planned application and implementation of research results	
—Extension, transferability and publication of results	
Total	100

Review and recommendation for funding of all proposals will be accomplished in cooperation with CSRS' Sustainable Agriculture Program.

Disposition

One copy of each proposal not selected for funding will be retained for a period of one year. The remaining copies will be destroyed.

Supplementary Information

The Special Research Grants Program is listed in the Catalog of Federal Domestic Assistance under No. 10.200. For reasons set forth in the final rule-related notice to 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), this program is excluded from the scope of Executive Order 12372 which requires intergovernmental consultation with State and local officials.

Under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3504(h)), the collection of information requirements contained in this Notice have been approved under OMB Document No. 0524–0022.

Done at Washington, DC, on this 7th day of May 1992.

John Patrick Jordan,

Administrator, Cooperative State Research Service.

[FR Doc. 92–11151 Filed 5–12–92; 8:45 am]

BILLING CODE 3410–22–M

federal register

Wednesday
May 13, 1992

Part V

Environmental Protection Agency

Hazardous Waste Management System; Notification Concerning the Basel Convention's Potential Implications for Hazardous Waste Exports and Imports; Notice

ENVIRONMENTAL PROTECTION AGENCY

[SW-FR 4132-5]

Harzardous Waste Management System; Notification Concerning the Basel Convention's Potential Implications for Hazardous Waste Exports and Imports

AGENCY: Environmental Protection Agency.

ACTION: Announcement of the entry into force of the Basel Convention.

SUMMARY: On May 5, 1992, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention) enters into force for the first twenty countries that have ratified it. The United States has not yet ratified the Basel Convention; therefore, U.S. requirements regarding imports and exports of hazardous waste remain unchanged. This information-only notice describes the development and major provisions of the Convention. It also discusses the potential impacts that requirements imposed by ratifying countries to implement the Convention may have on U.S. waste importers and exporters.

The complete text of the Basel Convention is included with this notice.

EFFECTIVE DATE: May 5, 1992.

FOR FURTHER INFORMATION CONTACT: For general information contract the RCRA Hotline, Office of Solid Waste, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC, 20460 from 9 a.m. to 7:30 p.m. (EST), Monday through Friday, except for Federal holidays; Telephone (800) 424–9346 (toll free) or, in the Washington, DC, Metropolitan area at (703) 920–9810.

For information on specific aspects of this notice, contract Ms. Angela Cracchiolo, Office of Solid Waste, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC, 20460, telephone (202) 260–4779.

SUPPLEMENTARY INFORMATION:

Outline

I. Basel Convention: Background

A. History of Development

The United Nations Environment Programme (UNEP) began working towards controlling international shipments of waste in 1982, pursuant to a 1982 UNEP Governing Council decision mandating the development of guidelines and principles for environmentally sound management of hazardous waste. At virtually the same time (1983), the Organization for Economic Cooperation and Development (OECD) Environment Committee's Waste Management Policy Group began working on a program to control transboundary movements of wastes. The United States has been an active participant in the activities of both OECD and UNEP.

Since 1984, OECD has adopted four legally binding Decisions for its members (the United States has agreed to all four Decisions). Briefly, these Decisions require OECD Members to:

1. Control international shipments via advance notification.

2. Develop an overall tracking system.

3. Require prior consent of receiving countries outside the OECD.

4. Define the scope of coverage for wastes that will be controlled.

In the interest of broader international involvement and commitment, OECD discontinued work in this area after a 1988 Decision [1] to defer to UNEP'S efforts. Much of OECD's early work, including the list identifying wastes to be covered by an international agreement, was adopted by UNEP without change.

Continuing development in this area, UNEP created the Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes, which were adopted by the UNEP Governing Council in 1987. The Cairo Guidelines contained definitions, provisions for generation, transportation, and management of waste, monitoring and control, remedial action, recordkeeping, safety and contingency planning, liability and compensation. Countries would have the right to refuse a waste shipment if it could not be handled in an environmentally sound manner. However, the Cairo Guidelines were nonbinding and unenforceable guidelines that acted as a code of practice. Soon after their completion, UNEP began planning a convention which would go beyond the Cairo Guidelines by including effective and enforceable monitoring and control requirements to ensure environmentally sound management of transboundary movements of hazardous and other wastes. The Basel Convention was negotiated under UNEP beginning in 1988.

A conference of UNEP delegates met in Basel, Switzerland, in March 1989, at which time the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was concluded and opened for signature. A two-step procedure is involved in "activating" the Convention. Countries first sign the Convention, then once they have the authority and are prepared to implement its terms, they may ratify it.

B. Reasons for Development

There are two major reasons for the development of the Basel Convention. The first involves the increasing shortage of waste management capacity in several countries, leading to larger volumes of solid and hazardous waste movements across borders. Some countries generate such small quantities of hazardous waste that it is not economically efficient to build disposal facilities in these countries, therefore, their waste is exported.

A second issue that provided a major impetus for the development of Basel is the occurrence of several international incidents where wastes which may have been hazardous wastes in either the country of origin or the country of import have been indiscriminately

[1] *Decision on Transfrontier Movements of Hazardous Waste* C(88)90(Final), adopted by the Council on May 27, 1988.

dumped in developing countries, either with or without their consent. For example, in August 1986, the ship Khian Sea left Philadelphia loaded with 15,000 tons of municipal incinerator ash and set sail for Haiti, where it unloaded some of its cargo. The shipping papers accompanying the waste labeled the incinerator ash as bulk construction material and top soil ash fertilizer. After Haiti strongly opposed this action, the incident gathered international attention, particularly from the Pan-American Health Organization and the World Health Organization. The Khian Sea then left Haiti and began a two-year voyage around the world in search of a country that would accept its waste. After several additional refusals and several changes of the ship's name, the Khian Sea appeared in Singapore with a new name and empty cargo holds.

Another incident involved waste from Italy that was transported and unloaded in Nigeria, in a total of five shipments from August 1987 to May 1988. In 1988 the Nigerian government ordered the waste to be sent back to Italy. After a lengthy trip and many refusals from ports, the waste was finally retuned to Italy.

For developing or newly industrialized countries, the practice of importing waste can be a very profitable one, and there can be a strong incentive for individuals in developing countries to participate in this activity. However, developing and newly industrialized countries often have limited capacity or capability to ensure proper waste treatment and disposal. Illegally disposed wastes can cause contamination of ground water, surface water, soil, air, and biota. A study by UNEP and the World Health Organization on contamination of water, soil, and air concluded that the "degree of contamination is worse in [developing] countries and newly industrialized countries than it is in most of the developed ones." [2] The contamination of the environment in developing countries can directly affect the health of the people, cause them to relocate, and cause the loss of productive land, natural resources, and certain economic activities. The negotiators of the Basel Convention wanted to promote environmentally sound management of exported and imported wastes, especially in these developing countries.

To date, at least 83 countries, representing the African, Latin-Caribbean and Asian-Pacific regions have banned hazardous waste imports, and a number have adopted strict penalties for illegal imports.

c. Entry Into Force of the Convention

1. 90 Days After 20th Ratification

The Basel Convention was open for signature from March 22, 1989, through March 22, 1990. Fifty-three countries signed the Convention, including the United States. By signing the Convention, a country indicates that it agrees with the goals of the Convention and is moving towards ratification. Ratification signals a country's ability to implement the provision of the Convention. As of February 5, 1992, twenty countries had ratified the Convention. Ninety days after the twentieth ratification (May 5, 1992), the Basel Convention will enter into force, becoming effective for those twenty countries. For any country that ratifies the Convention after its entry into force, the Basel Convention will be effective for that country 90 days after the date it ratifies (Article 25).

2. List of Ratifying Countries

The following countries ratified the Basel Convention on or before February 5, 1992:

Argentina	Mexico
Australia	Nigeria
China	Norway
Czechoslovakia	Panama
El Salvador	Romania
Finland	Saudi Arabia
France	Sweden
Hungary	Switzerland
Jordan	Syria
Liechtenstein	Uruguay

On March 20, 1992, Poland became the twenty-first country to ratify the Convention; therefore, Basel will enter into force for Poland on June 18, 1992.

D. Next Steps in Implementation of the Convention

1. Submission of Waste Lists to UNEP Interim Secretary

Within six months of becoming a Party to the Convention, each Party must submit to the Secretariat a list of those wastes which it considers hazardous, other than those listed in Annexes I and II of the Convention. In addition to the wastes listed in the Convention, Basel provisions apply to any other wastes considered or defined as hazardous by its Parties.

2. Meeting of the Conference of the Parties

The Basel Convention requires that a meeting of the Conference of the Parties be held within one year of the Convention's entry into force to discuss implementation issues such as technical guidelines to ensure environmentally sound management. Adoption of procedural rules and determination of financial participation, as well as discussions on development of a liability protocol, will also be topics of the first meeting. The first meeting of the Conference of the Parties has not been scheduled, but the Interim Secretariat for the Basel Convention expects it to take place in Fall 1992.

II. Basel Convention: Summary of Provisions

The Basel Convention's main goal is to protect human health and the environment against the adverse effects that may result from mismanagement or careless international movements of hazardous and other wastes. The Convention seeks a reduction in waste generation, a reduction in transboundary waste movements consistent with environmentally sound and efficient waste management, and sets a standard of environmentally sound management for those waste movements that do occur. Wastes covered by the Convention include hazardous wastes, household wastes, and residues arising from the incineration of household wastes.

The Convention controls the transboundary movement of these wastes from one Party to another. Before a transboundary movement of hazardous or other wastes may occur, the exporting country must notify in writing the countries of import and transit and must obtain their consent. The shipment cannot proceed until the exporting country has received written consent from the importing country and any transit countries as well as confirmation of the existence of a waste management contract between the exporter and the importer. Both the exporting and importing countries are obligated to prohibit a transboundary movement if there is reason to believe that the waste will not be managed in an environmentally sound manner in the importing country.

In addition, Basel Parties are prohibited from exporting or importing covered waste to or from non-Parties except in cases in which separate government agreements exist which provide for environmentally sound management.

A. Waste Coverage

The Basel Convention defines *hazardous wastes* as:

- Wastes listed in Annex I (of the Basel Convention) unless they do not exhibit one or more of the

[2] "Third world has most chemical contamination," *Chemical & Engineering News*, October 3, 1988, pp. 8–9.

characteristics identified in Annex III, using national testing procedures, and

• Wastes considered to be or defined as hazardous by one or more of the exporting, importing, or transit Parties [3].

In addition, Basel covers "other wastes" (listed in Annex II), which are wastes from households and residues from the incineration of household waste.

Two waste streams are specifically excluded from coverage:

• Radioactive wastes covered by other international controls, and

• Wastes from ships covered by other international controls.

B. Prohibitions on Shipments To and From Non-Parties

The Convention prohibits transboundary movements of covered wastes between Parties and non-Parties. However, pursuant to Article 11, exports or imports of Basel wastes between Parties and non-Parties may occur if there is a separate pre-existing bilateral or multilateral agreement between those countries that is compatible with the environmentally sound management standard in Basel. Bilateral or multilateral agreements or arrangements that Parties enter into after the entry into force date of the Convention must not derogate from the environmentally sound management required under Basel.

The United States currently has two pre-existing bilateral agreements. One agreement is with Canada, to which the U.S. exports 68 percent of its total exported hazardous waste (1990), and the other is with Mexico, to which the U.S. exports 28 percent of its total exported hazardous waste (1990). In addition, on March 30, 1992, the Organization for Economic Cooperation and Development (OECD), of which the United States is a Member, adopted a multilateral Decision that allows for transboundary movements of waste for recovery.

C. Prerequisites to Exporting

The Convention requires that wastes be exported only if the exporting country does not have adequate disposal capacity, facilities, or disposal sites to dispose of the waste in an environmentally sound and economically efficient manner *or*, if the wastes are required as a raw material for recycling or recovery industries in the importing country.

[3] In the case of the United States, the Resource Conservation and Recovery Act (RCRA), as amended, is the domestic legislation that provides authority for EPA to identify hazardous wastes.

D. Notice and Consent

Before an export may occur, the Convention requires that the exporting country notify the receiving country and any transit countries of the proposed movement of hazardous wastes or other wastes. (A transit country is one through which the waste shipment will travel en route to the importing country.) Upon receiving notice of a proposed shipment, the importing and transit countries may either consent to the shipment with or without conditions, deny permission, or request additional information. The waste shipment may be exported only after the importing and transit countries have consented. The exporting country must take actions to stop the export if it occurs without the written consent of the importing and transit country or under conditions discussed under paragraph E below.

E. Exporting and Importing Country Responsibilities

Both exporting and importing countries are responsible for prohibiting or stopping (if en route) transboundary shipments of waste if they have reason to believe that the waste will not be handled in an environmentally sound manner in the importing country. *Environmentally sound manner* is defined in the Convention as "taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes." Technical guidelines for environmentally sound management will be a topic for discussion at the first meeting of the Conference of the Parties (Article 4).

In addition, if a shipment cannot be delivered to the destination for which consent has been given, or is not accepted by the destination facility, the exporter has the responsibility for ensuring that the wastes are returned to the exporting country if alternative arrangements cannot be made for their environmentally sound disposal, consistent with all terms of the Convention, within 90 days, or another time-frame agreed upon by the countries concerned. The exporting country must also require that the exporter or generator take back any wastes illegally exported or must assume responsibility for the waste if the exporter or generator does not do so. If the disposer in the importing country committed the illegal act, then this obligation rests with the importing country. Where responsibility for the illegal movement cannot be determined, Parties are required to cooperate to ensure environmentally sound management.

F. International Cooperation

A fundamental principle of the Basel Convention is that Parties respect the import laws of other Parties. If a country has prohibited the import of certain wastes, and has notified other countries of that decision, Parties may not allow exports of prohibited wastes to that country.

All Parties have an obligation to cooperate with other Parties in developing technical guidelines for achieving environmentally sound management. This involves an obligation to share information on technical standards that will promote environmentally sound waste management. In addition, this commitment involves cooperation in monitoring the effects of certain waste management practices on human health and the environment. Parties also are required to cooperate in providing assistance to developing countries in implementing environmentally sound management practices.

G. Tracking, Accidents, and Reporting

The Convention includes requirements for tracking wastes through use of a "movement document," which must accompany the waste shipment from the point the transboundary movement begins to the point of disposal. (Disposal includes a subset of activities which may lead to recovery as well as final disposal under the Convention's terms.) In addition, shipments of waste must be packaged, labelled, and transported in conformance with international rules.

If an accident involving a waste shipment occurs during transportation or disposal that poses a risk to human health or the environment, the Convention requires that the responsible Parties inform potentially affected countries of the accident. In addition, Basel Parties must inform each other, through the Secretariat of the Convention, of changes in the authorities responsible for implementation of the Convention in their country, changes in the definition of hazardous waste, and decisions to prohibit or not consent to the import of certain wastes. Lastly, Parties must submit an annual report to the Secretariat. The report must include amounts and types of hazardous and other wastes exported and their destination, transit countries, and disposal method; amounts and types of hazardous and other wastes imported, their origin, and disposal method;

disposals that were not completed as planned; efforts to reduce waste exports; and other specified pieces of information.

H. Ban of Shipments to Antarctica Treaty Area

The Convention prohibits the export of hazardous or other wastes to the Antarctica Treaty Area (south of 60 degrees south latitude).

III. Progress Towards U.S. Ratification of Basel

A. Basel Signed by U.S. on March 21, 1990

United States' authority over the export of hazardous wastes is found in section 3017 of the Resource Conservation and Recovery Act (RCRA), which currently requires notice to, and consent from, an importing country prior to export of hazardous waste. In March 1989, President Bush announced he would seek legislation which would ensure that U.S. hazardous waste be exported only when an agreement exists with the importing country that ensure environmentally sound management of the waste. The United States Ambassador to the United Nations, Thomas Pickering, signed the Basel Convention on March 21, 1990, as part of the United States' new policy.

B. Importance of U.S. Ratification

1. Negotiation of Rules for Implementation and Related Protocols

Within one year of entry into force of the Convention, a first meeting of the Conference of the ratifying Parties will be held. It is anticipated that the first meeting will occur in Fall 1992. The purpose of the meeting will be to agree upon and adopt procedural and financial participation rules for the Parties and to consider other implementation issues, such as technical guidelines for environmentally sound management. Discussions may also included amendments or additional action needed to carry out the mission of the Convention, establishment of subsidiary bodies, and adoption of appropriate liability protocols.

2. Full Participation Only by Basel Parties

Non-Party countries, such as the U.S., and other interested parties may be represented as observers at meetings of the Conference of the Parties, and may be allowed courtesy participation in the negotiation process. However, non-Parties will not have the authority to vote on these issues and may face other constraints in fully representing their positions during the negotiations.

C. Procedure for U.S. Ratification of Basel

The United States Constitution requires that the Senate consent to the ratification of international treaties. In keeping with this requirement, President Bush transmitted the Basel Convention to the Senate for its advice and consent in May 1991. In addition, before ratification can occur, the U.S. government must have sufficient authority to implement the terms of the Convention. Current authority is lacking in several major areas, including:

- Authority to control exports or imports of certain Basel-covered wastes (*e.g.*, household waste and household incinerator ash);
- Authority to object to a shipment of waste leaving the U.S. if it has reason to believe the waste will not be managed in an environmentally sound manner, notwithstanding consent of the importing country.
- Authority to require the exporters bring illegal waste shipments back to the U.S. or the authority to assume such a responsibility should the exporter fail to do so.

An Administration bill and a number of other bills have been introduced into both Houses of Congress to increase EPA's authority over transboundary waste movements, consistent with provisions of the Convention.

D. Proposed Legislation

The following legislative proposals covering transboundary waste movements were introduced into the Congress in 1991:

1. "The Hazardous and Additional Waste Export and Import Act of 1991," introduced on behalf of the Administration into the Senate by Senator Chafee (S. 1082) and into the House of Representatives by Congressman Lent (H.R. 2398), May 1991.

2. "The Waste Export Control Act," (H.R. 2358), introduced into the House of Representatives by Congressman Synar and Wolpe, May 1991.

3. "The Waste Export and Import Prohibition Act," (H.R. 2580), introduced into the House of Representatives by Congressman Towns submitted H.R. 2580, June 1991.

4. "The International Hazardous Waste Disposal and Enforcement Act of 1991," (S. 1643), introduced into the United States Senate by Senator Akaka, August 1991.

In March 1992, as part of reauthorizing legislation for RCRA, Chairman Baucus of the Senate Environment and Public Works Committee, Environmental Protection Subcommittee, introduced into committee mark-up a section governing hazardous and additional waste imports and exports.

IV. Existing International Agreements

The authors of the Basel Convention recognized that some countries may be involved in pre-existing government-to-government arrangements regarding transboundary waste movements and that some countries may have difficulty ratifying the Convention before it entered into force. Thus, under article 11, upon entry into force of the Basel Convention, transboundary movements of covered waste between Basel Parties and non-Parties may continue to take place if there is an international agreement between these countries for those wastes, provided that the agreement is compatible with the environmentally sound management required under the Convention. The U.S. currently has a bilateral agreement with Canada and a bilateral agreement with Mexico. In addition, the U.S., as a member of the OECD, is bound by a multilateral arrangement for transboundary movements of recyclables within the OECD region. Therefore, after May 5, 1992, transboundary movements of Basel wastes may take place between selected Basel Parties and the U.S., but only pursuant to the bilateral or multilateral agreements or arrangements noted above.

A. U.S./Canada Bilateral Agreement

In 1986, the United States and Canada entered into a bilateral agreement concerning transboundary movement of hazardous waste. The 14-article agreement covers imports, exports, and transit movements. The agreement stipulates that:

1. The exporting country notify the importing country of a proposed export;

2. The designated authority has 30 days from the date of receipt of the notice to indicate consent or objection to the export;

3. If no objection is received within the 30-day period, the country of import is considered to have no objection to the export.

Also included in the U.S./Canada agreement are provisions which require that shipments conform to the regulations of the importing country; provisions for notification of transit shipments; requirements for cooperative efforts in monitoring to ensure compliance with regulations in both countries; and a provision for readmitting exports for any reason. Parties also may require that any transboundary movement of hazardous

waste be insured against damage to third parties.

B. U.S./Mexico Bilateral Agreement

Also in 1986, the U.S. and Mexico entered into a bilateral agreement for hazardous waste transboundary movements. The agreement allows the export of hazardous waste from Mexico into the United States for recovery or disposal, as well as transit shipments through the U.S. and Mexico. Since the import of hazardous wastes for disposal in Mexico is forbidden under Mexican Presidential decree, hazardous wastes may be exported to Mexico under the agreement only for the purpose of recycling.

The U.S./Mexico agreement requires the exporting country to provide a notification of intent to export hazardous waste to the importing country 45 days in advance of shipment; the consent or objection by the importing country must be reported in another 45 days. In contrast to the Canadian agreement, if a response from Mexico is not received within the prescribed time, consent is not implied. The bilateral agreement also references the requirement under the Mexican Maquiladora Program that hazardous wastes generated from raw materials admitted in bond be returned to the country of export of the raw materials. The Maquiladora Program was established to attract U.S. industries to Mexico to promote industrial development in that country. The liability provisions of the U.S./Mexico bilateral agreement call for the country of export to take action, within the limits of its legal authority, that will result in:

1. The return of the hazardous waste to the country of export;
2. The return, insofar as practicable, of the status quo ante of the affected ecosystem; and
3. The repair, through compensation, of damages caused to persons, property, or the environment.

C. OECD Decision

On March 30, 1992, the Council of the Organization for Economic Cooperation and Development (OECD) adopted a legally binding Decision on The Control of Transfrontier Movements of Wastes Destined for Recovery Operations. The OECD Member countries which adopted the Decision are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain Sweden, Switzerland, Turkey, United Kingdom, and the United States. The OECD Decision, which covers waste materials destined for recovery operations, is a preexisting arrangement under Article 11 of the Basel Convention. The OECD multilateral arrangement will allow for the U.S. to continue exporting and importing hazardous waste to and from other OECD Members, including those who are Basel Parties, for the purpose of recovery, after entry into force of the Basel Convention. However, the OECD arrangement does not cover wastes imported and exported for final disposal.

The OECD Decision requires Member countries to control transfrontier movements of hazardous wastes and ensure that adequate and timely information is transmitted from the exporting country to the importing country. The Decision requires that responsibility for the proper management of the waste, including the necessary re-exportation of waste, if safe disposal cannot be assured by the importing country, be specified in a contract between the exporter and the importer. Recognizing that Member countries would require time to implement the terms of the Decision within their domestic regulatory framework, yet desiring implementation of the Decision as quickly as possible, the OECD Council Decision was made effective on the date of its adoption. The U.S. expects to issue regulations implementing the Decision very shortly. Until such regulations become effective, all existing regulations regarding the export of hazardous wastes from the U.S. and imports of hazardous wastes to the U.S. remain in effect and enforceable. After May 5, 1992, exports to and imports from OECD Member countries for final disposal will cease if the OECD country has ratified the Basel Convention. OECD Members that have ratified Basel include: Australia, Finland, France, Norway, Sweden, and Switzerland.

Dated: May 5, 1992

Don R. Clay,

Assistant Administrator.

V. Text of the Basel Convention

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: Preamble

The Parties to this Convention,

Aware of the risk of damage to human health and the environment caused by hazardous wastes and other wastes and the transboundary movement thereof,

Mindful of the growing threat to human health and the environment posed by the increased generation and complexity, and transboundary movement of hazardous wastes and other wastes,

Mindful also that the most effective way of protecting human health and the environment from the dangers posed by such wastes is the reduction of their generation to a minimum in terms of quantity and/or hazard potential,

Convinced that States should take necessary measures to ensure that the management of hazardous wastes and other wastes including their transboundary movement and disposal is consistent with the protection of human health and the environment whatever the place of their disposal,

Noting that States should ensure that the generator should carry out duties with regard to the transport and disposal of hazardous wastes and other wastes in a manner that is consistent with the protection of the environment, whatever the place of disposal,

Fully recognizing that any State has the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in its territory,

Recognized also the increasing desire for the prohibition of transboundary movements of hazardous wastes and their disposal in other States, especially developing countries,

Convinced that hazardous wastes and other wastes should, as far as is compatible with environmentally sound and efficient management, be disposed of in the State where they were generated,

Aware also that transboundary movements of such wastes from the State of their generation to any other State should be permitted only when conducted under conditions which do not endanger human health and the environment, and under conditions in conformity with the provisions of this Convention,

Considering that enhanced control of transboundary movement of hazardous wastes and other wastes will act as an incentive for their environmentally sound management and for the reduction of the volume of such transboundary movement,

Convinced that States should take measures for the proper exchange of information on and control of the transboundary movement of hazardous wastes and other wastes from and to those States,

Noting that a number of international and regional agreements have addressed the issue of protection and preservation of the environment with regard to the transit of dangerous goods,

Taking into account the Declaration of the United States Conference on the Human Environment (Stockholm, 1972), the Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes adopted by the Governing Council of the United Nations Environment Programme (UNEP) by decision 14/30 of 17 June 1987, the Recommendations of the United Nations Committee on Experts on the Transport of Dangerous Goods (formulated in 1957 and updated biennially), relevant recommendations, declarations, instruments and regulations adopted within the United Nations system and the work and studies done within other international and regional organizations,

Mindful of the spirit, principles, aims and functions of the World Charter for Nature adopted by the General Assembly of the

United Nations at its thirty-seventh session (1982) as the rule of ethics in respect of the protection of the human environment and the conservation of natural resources,

Affirming that States are responsible for the fulfillment of their international obligations concerning the protection of human health and protection and preservation of the environment, and are liable in accordance with international law,

Recognizing that in the case of a material breach of the provisions of this Convention or any protocol thereto the relevant international law of treaties shall apply,

Aware of the need to continue the development and implementation of environmentally sound low-waste technologies, recycling options, good housekeeping and management systems with a view to reducing to a minimum the generation of hazardous wastes and other wastes,

Aware also of the growing international concern about the need for stringent control of transboundary movement of hazardous wastes and other wastes, and of the need as far as possible to reduce such movement to a minimum,

Concerned about the problem of illegal transboundary traffic in hazardous wastes and other wastes,

Taking into account also the limited capabilities of the developing countries to manage hazardous wastes and other wastes,

Recognizing the need to promote the transfer of technology for the sound management of hazardous wastes and other wastes produced locally, particularly to the developing countries in accordance with the spirit of the Cairo Guidelines and decision 14/16 of the Governing Council of UNEP on Promotion of the transfer of environmental protection technology,

Recognizing also that hazardous wastes and other wastes should be transported in accordance with relevant international conventions and recommendations,

Convinced also that the transboundary movement of hazardous wastes and other wastes should be permitted only when the transport and the ultimate disposal of such wastes is environmentally sound, and

Determined to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes,

Have Agreed as Follows:

Article 1

Scope of the Convention

1. The following wastes that are subject to transboundary movement shall be "hazardous wastes" for the purposes of this Convention:

(a) Wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III; and

(b) Wastes that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit.

2. Wastes that belong to any category contained in Annex II that are subject to transboundary movement shall be other wastes for the purposes of this Convention.

3. Wastes which, as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials, are excluded from the scope of this Convention.

4. Wastes which derive from the normal operations of a ship, the discharge of which is covered by another international instrument, are excluded from the scope of this Convention.

Article 2

Definitions

For the purposes of this Convention:

1. *Wastes* are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law;

2. *Management* means the collection, transport and disposal of hazardous wastes or other wastes, including after-care of disposal sites;

3. *Transboundary movement* means any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one State to or through an area under the jurisdiction of another State or to or through an area not under the national jurisdiction of any State, provided at least two States are involved in the movement;

4. *Disposal* means any operation specified in Annex IV to this Convention;

5. *Approved site or facility* means a site or facility for the disposal of hazardous wastes or other wastes which is authorized or permitted to operate for this purpose by a relevant authority of the State where the site or facility is located;

6. *Competent authority* means one governmental authority designated by a Party to be responsible, within such geographical area as the Party may think fit, for receiving the notification of a transboundary movement of hazardous wastes or other wastes, and any information related to it, and for responding to such a notification, as provided in Article 6;

7. *Focal point* means the entity of a Party referred to in Article 5 responsible for receiving and submitting information as provided for in Articles 13 and 15;

8. *Environmentally sound management of hazardous wastes or other wastes* means taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes;

9. *Area under the national jurisdiction of a State* means any land, marine area or airspace within which a State exercises administrative and regulatory responsibility in accordance with international law in regard to the protection of human health or the environment;

10. *State of export* means a Party from which a transboundary movement of hazardous wastes or other wastes is planned to be initiated or is initiated;

11. *State of import* means a Party to which a transboundary movement of hazardous wastes or other wastes is planned or takes place for the purpose of disposal therein or for the purpose of loading prior to disposal in an area not under the national jurisdiction of any State;

12. *State of transit* means any State, other than the State of export or import, through which a movement of hazardous wastes or other wastes is planned or takes place;

13. *States concerned* means Parties which are States of export or import, or transit States, whether or not Parties;

14. *Person* means any natural or legal person;

15. *Exporter* means any person under the jurisdiction of the State of export who arranges for hazardous wastes or other wastes to be exported;

16. *Importer* means any person under the jurisdiction of the State of import who arranges for hazardous wastes or other wastes to be imported;

17. *Carrier* means any person who carries out the transport of hazardous wastes or other wastes;

18. *Generator* means any person whose activity produces hazardous wastes or other wastes or, if that person is not known, the person who is in possession and/or control of those wastes;

19. *Disposer* means any person to whom hazardous wastes or other wastes are shipped and who carries out the disposal of such wastes,

20. *Political and/or economic integration organization* means any organization constitutes by sovereign States to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve, formally confirm or accede to it;

21. *Illegal traffic* means any transboundary movement of hazardous wastes or other wastes as specified in Article 9.

Article 3

National Definitions of Hazardous Wastes

1. Each Party shall, within six months of becoming a Party to this Convention, inform the Secretariat of the Convention of the wastes, other than those listed in Annexes I and II, considered or defined as hazardous under its national legislation and of any requirements concerning transboundary movement procedures applicable to such wastes.

2. Each Party shall subsequently inform the Secretariat of any significant changes to the information it has provided pursuant to paragraph 1.

3. The Secretariat shall forthwith inform all Parties of the information it has received pursuant to paragraphs 1 and 2.

4. Parties shall be responsible for making the information transmitted to them by the Secretariat under paragraph 3 available to their exporters.

Article 4

General Obligations

1. (a) Parties exercising their right to prohibit the import of hazardous wastes or other wastes for disposal shall inform the other Parties of their decision pursuant to Article 13.

(b) Parties shall prohibit or shall not permit the export of hazardous wastes and other wastes to the Parties which have prohibited the import of such wastes, when notified pursuant to subparagraph (a) above.

(c) Parties shall prohibit or shall not permit the export of hazardous wastes and other wastes if the State of import does not consent in writing to the specific import, in the case where that State of import has not prohibited the import of such wastes.

2. Each Party shall take the appropriate measures to:

(a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects;

(b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal;

(c) Ensure that persons involved in the management of hazardous wastes or other wastes within it take such steps as are necessary to prevent pollution due to hazardous wastes and other wastes arising from such management and, if such pollution occurs, to minimize the consequences thereof for human health and the environment;

(d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes, and is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement;

(e) Not allow the export of hazardous wastes or other wastes to a State or group of States belonging to an economic and/or political integration organization that are Parties, particularly developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided on by the Parties at their first meeting;

(f) Require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned, according to Annex V A, to state clearly the effects of the proposed movement on human health and the environment;

(g) Prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner;

(h) Co-operate in activities with other Parties and interested organizations, directly and through the Secretariat, including the dissemination of information on the transboundary movement of hazardous wastes and other wastes, in order to improve the environmentally sound management of such wastes and to achieve the prevention of illegal traffic;

3. The Parties consider that illegal traffic in hazardous wastes or other wastes is criminal.

4. Each Party shall take appropriate legal, administrative and other measures to implement and enforce the provisions of this Convention, including measures to prevent and punish conduct in contravention of the Convention.

5. A Party shall not permit hazardous wastes or other wastes to be exported to a non-Party or to be imported from a non-Party.

6. The Parties agree not to allow the export of hazardous wastes or other wastes for disposal within the area south of 60° South latitude, whether or not such wastes are subject to transboundary movement.

7. Furthermore, each Party shall: (a) Prohibit all persons under its national jurisdiction from transporting or disposing of hazardous wastes or other wastes unless such persons are authorized or allowed to perform such types of operations;

(b) Require that hazardous wastes and other wastes that are to be the subject of a transboundary movement be packaged, labelled, and transported in conformity with generally accepted and recognized international rules and standards in the field of packaging, labelling, and transport, and that due account is taken of relevant internationally recognized practices;

(c) Require that hazardous wastes and other wastes be accompanied by a movement document from the point at which a transboundary movement commences to the point of disposal.

8. Each Party shall require that hazardous wastes or other wastes, to be exported, are managed in an environmentally sound manner in the State of import or elsewhere. Technical guidelines for the environmentally sound management of wastes subject to this Convention shall be decided by the Parties at their first meeting.

9. Parties shall take the appropriate measures to ensure that the transboundary movement of hazardous wastes and other wastes only be allowed if:

(a) The State of export does not have the technical capacity and the necessary facilities, capacity or suitable disposal sites in order to dispose of the wastes in question in an environmentally sound and efficient manner; or

(b) The wastes in question are required as a raw material for recycling or recovery industries in the State of import; or

(c) The transboundary movement in question is in accordance with other criteria to be decided by the Parties, provided those criteria do not differ from the objectives of this Convention.

10. The obligation under this Convention of States in which hazardous wastes and other wastes are generated to require that those wastes are managed in an environmentally sound manner may not under any circumstances be transferred to the States of import or transit.

11. Nothing in this Convention shall prevent a Party from imposing additional requirements that are consistent with the provisions of this Convention, and are in accordance with the rules of international law, in order better to protect human health and the environment.

12. Nothing in this Convention shall affect in any way the sovereignty of States over their territorial sea established in accordance with international law, and the sovereign rights and the jurisdiction which States have in their exclusive economic zones and their continental shelves in accordance with international law, and the exercise by ships and aircraft of all States of navigational rights and freedoms as provided for in international law and as reflected in relevant international instruments.

13. Parties shall undertake to review periodically the possibilities for the reduction of the amount and/or the pollution potential of hazardous wastes and other wastes which are exported to other States, in particular to developing countries.

Article 5

Designation of Competent Authorities and Focal Point

To facilitate the implementation of this Convention, the Parties shall:

1. Designate or establish one or more competent authorities and one focal point. One competent authority shall be designated to receive the notification in case of a State of transit.

2. Inform the Secretariat, within three months of the date of the entry into force of this Convention for them, which agencies they have designated as their focal point and their competent authorities.

3. Inform the Secretariat, within one month of the date of decision, of any changes regarding the designation made by them under paragraph 2 above.

Article 6

Transboundary Movement between Parties

1. The State of export shall notify, or shall require the generator or exporter to notify, in writing, through the channel of the competent authority of the State of export, the competent authority of the States concerned of any proposed transboundary movement of hazardous wastes or other wastes. Such notification shall contain the declarations and information specified in Annex V A, written in a language acceptable to the State of import. Only one notification needs to be sent to each State concerned.

2. The State of import shall respond to the notifier in writing, consenting to the movement with or without conditions, denying permission for the movement, or requesting additional information. A copy of the final response of the State of import shall be sent to the competent authorities of the States concerned which are Parties.

3. The State of export shall not allow the generator or exporter to commence the transboundary movement until it has received written confirmation that:

(a) The notifier has received the written consent of the State of import; and

(b) The notifier has received from the State of import confirmation of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes in question.

4. Each State of transit which is a Party shall promptly acknowledge to the notifier receipt of the notification. It may subsequently respond to the notifier in writing, within 60 days, consenting to the movement with or without conditions,

denying permission for the movement, or requesting additional information. The State of export shall not allow the transboundary movement to commence until it has received the written consent of the State of transit. However, if at any time a Party decides not to require prior written consent, either generally or under specific conditions, for transit transboundary movements of hazardous wastes or other wastes, or modifies its requirements in this respect, it shall forthwith inform the other Parties of its decision pursuant to Article 13. In this latter case, if no response is received by the State of export within 60 days of the receipt of a given notification by the State of transit, the State of export may allow the export to proceed through the State of transit.

5. In the case of a transboundary movement of wastes where the wastes are legally defined as or considered to the hazardous wastes only:

(a) By the State of export, the requirements of paragraph 9 of this Article that apply to the importer or disposer and the State of import shall apply *mutatis mutandis* to the exporter and the State of export, respectively;

(b) By the State of import, or by the States of import and transit which are Parties, the requirements of paragraphs 1, 3, 4 and 6 of this Article that apply to the exporter and State of export shall apply mutatis mutandis to the importer or disposer and State of import, respectively; or

(c) By any State of transit which is a Party, the provisions of paragraph 4 shall apply to such State.

6. The State of export may, subject to the written consent of the States concerned, allow the generator or the exporter to use a general notification where hazardous wastes or other wastes having the same physical and chemical characteristics are shipped regularly to the same disposer via the same customs office of exit of the State of export via the same customs office of entry of the State of import, and, in the case of transit, via the same customs office of entry and exit of the State or States of transit.

7. The States concerned may make their written consent to the use of the general notification referred to in paragraph 6 subject to the supply of certain information, such as the exact quantities or periodical lists of hazardous wastes or other wastes to be shipped.

8. The general notification and written consent referred to in paragraphs 6 and 7 may cover multiple shipments of hazardous wastes or other wastes during a maximum period of 12 months.

9. The Parties shall require that each person who takes charge of a transboundary movement of hazardous wastes or other wastes sign the movement document either upon delivery or receipt of the wastes in question. They shall also require that the disposer inform both the exporter and the competent authority of the State of export of receipt by the disposer of the wastes in question and, in due course, of the completion of disposal as specified in the notification. If no such information is received within the State of export, the competent authority of the State of export or the exporter shall so notify the State of import.

10. The notification and response required by this Article shall be transmitted to the competent authority of the Parties concerned or to such governmental authority as may be appropriate in the case of non-Parties.

11. Any transboundary movement of hazardous wastes or other wastes shall be covered by insurance, bond or other guarantee as may be required by the State of import or any State of transit which is a Party.

Article 7

Transboundary Movement from a Party through States which are not Parties

Paragraph 2 of Article 6 of the Convention shall apply *mutatis mutandis* to transboundary movement of hazardous wastes or other wastes from a party through a State or States which are not Parties.

Article 8

Duty to Re-import

When a transboundary movement of hazardous wastes or other wastes to which the consent of the States concerned has been given, subject to the provisions of this Convention, cannot be completed in accordance with the terms of the contract, the State of export shall ensure that the wastes in question are taken back into the State of export, by the exporter, if alternative arrangements cannot be made for their disposal in an environmentally sound manner, within 90 days from the time that the importing State informed the State of export and the Secretariat, or such other period of time as the States concerned agree. To this end, the State of export and any Party of transit shall not oppose, hinder or prevent the return of those wastes to the State of export.

Article 9

Illegal Traffic

1. For the purpose of this Convention, any transboundary movement of hazardous wastes or other wastes:

(a) Without notification pursuant to the provisions of this Convention to all States concerned; or

(b) Without the consent pursuant to the provisions of this Convention of a State concerned; or

(c) With consent obtained from States concerned through falsification, misrepresentation or fraud; or

(d) that does not conform in a material way with the documents; or

(e) that results in deliberate disposal (e.g. dumping) of hazardous wastes or other wastes in contravention of this Convention and of general principles of international law, shall be deemed to be illegal traffic.

2. In case of a transboundary movement of hazardous wastes or other wastes deemed to be illegal traffic as the result of conduct on the part of the exporter or generator, the State of export shall ensure that the wastes in question are:

(a) taken back by the exporter or the generator or, if necessary, by itself into the State of export, or, if impracticable,

(b) are otherwise disposed of in accordance with the provisions of this Convention,

within 30 days from the time the State of export has been informed about the illegal traffic or such other period of time as States concerned may agree. To this end the Parties concerned shall not oppose, hinder or prevent the return of those wastes to the State of export.

3. In the case of a transboundary movement of hazardous wastes or other wastes deemed to be illegal traffic as the result of conduct on the part of the importer or disposer, the State of import shall ensure that the wastes in question are disposed of in an environmentally sound manner by the importer or disposer or, if necessary, by itself within 90 days from the time the illegal traffic has come to the attention of the State of import or such other period of time as the States concerned may agree. To this end, the parties concerned shall co-operate, as necessary, in the disposal of the wastes in an environmentally sound manner.

4. In case where the responsibility for the illegal traffic cannot be assigned either to the exporter or generator or to the importer or disposer, the Parties concerned or other parties, as appropriate, shall ensure, through co-operation, that the wastes in question are disposed of as soon as possible in an environmentally sound manner either in the State of export or the State of import or elsewhere as appropriate.

5. Each Party shall introduce appropriate national/domestic legislation to prevent and punish illegal traffic. The parties shall co-operate with a view to achieving the objects of this Article.

Article 10

International Co-operation

1. The Parties shall co-operate with each other in order to improve and achieve environmentally sound management of hazardous wastes and other wastes.

2. To this end, the Parties shall:

(a) Upon request, make available information, whether on a bilateral or multilateral basis, with a view to promoting the environmentally sound management of hazardous wastes and other wastes, including harmonization of technical standards and practices for the adequate management of hazardous wastes and other wastes;

(b) Co-operate in monitoring the effects of the management of hazardous wastes on human health and the environment;

(c) Co-operate, subject to their national laws, regulations and policies, in the development and implementation of new environmentally sound low-waste technologies and the improvement of existing technologies with a view to eliminating, as far as practicable, the generation of hazardous wastes and other wastes and achieving more effective and efficient methods of ensuring their management in an environmentally sound manner, including the study of the economic, social and environmental effects of the adoption of such new or improved technologies;

(d) Co-operate actively, subject to their national laws, regulations and policies, in the transfer of technology and management systems related to the environmentally sound

management of hazardous wastes and other wastes. They shall also co-operate in developing the technical capacity among Parties, especially those which may need and request technical assistance in this field;

(e) Co-operate in developing appropriate technical guidelines and/or codes of practice.

3. The Parties shall employ appropriate means to co-operate in order to assist developing countries in the implementation of subparagraphs a, b, c, and d of paragraph 2 of Article 4.

4. Taking into account the needs of developing countries, co-operation between Parties and the competent international organizations is encouraged to promote, *inter alia*, public awareness, the development of sound management of hazardous wastes and other wastes and the adoption of new low-waste technologies.

Article 11

Bilateral, Multilateral and Regional Agreements

1. Notwithstanding the provisions of Article 4 paragraph 5, Parties may enter into bilateral, multilateral, or regional agreements or arrangements regarding transboundary movement of hazardous wastes or other wastes with Parties or non-Parties provided that such agreements or arrangements do not derogate from the environmentally sound management of hazardous wastes and other wastes as required by this Convention. These agreements or arrangements shall stipulate provisions which are not less environmentally sound than those provided for by this Convention in particular taking into account the interests of developing countries.

2. Parties shall notify the Secretariat of any bilateral, multilateral or regional agreements or arrangements referred to in paragraph 1 and those which they have entered into prior to the entry into force of this Convention for them, for the purpose of controlling transboundary movements of hazardous wastes and other wastes which take place entirely among the Parties to such agreements. The provisions of this Convention shall not affect transboundary movements which take place pursuant to such agreements provided that such agreements are compatible with the environmentally sound management of hazardous wastes and other wastes as required by this Convention.

Article 12

Consultations on Liability

The Parties shall co-operate with a view to adopting, as soon as practicable, a protocol setting out appropriate rules and procedures in the field of liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes.

Article 13

Transmission of Information

1. The Parties shall, whenever it comes to their knowledge, ensure that, in the case of an accident occurring during the transboundary movement of hazardous wastes or other wastes or their disposal, which are likely to present risks to human health and the environment in other States, those states are immediately informed.

2. The Parties shall inform each other, through the Secretariat, of:

(a) Changes regarding the designation of competent authorities and/or focal points, pursuant to Article 5;

(b) Changes in their national definition of hazardous wastes, pursuant to Article 3;

and, as soon as possible,

(c) Decisions made by them not to consent totally or partially to the import of hazardous wastes or other wastes for disposal within the area under their national jurisdiction;

(d) Decisions taken by them to limit or ban the export of hazardous wastes or other wastes;

(e) Any other information required pursuant to paragraph 4 of this Article.

3. The Parties, consistent with national laws and regulations, shall transmit, through the Secretariat, to the Conference of the Parties established under Article 15, before the end of each calendar year, a report on the previous calendar year, containing the following information:

(a) Competent authorities and focal points that have been designated by them pursuant to Article 5;

(b) Information regarding transboundary movements of hazardous wastes or other wastes in which they have been involved, including:

(i) The amount of hazardous wastes and other wastes exported, their category characteristics, destination, any transit country and disposal method as stated on the response to notification;

(ii) The amount of hazardous wastes and other wastes imported, their category, characteristics, origin, and disposal methods;

(iii) Disposals which did not proceed as intended;

(iv) Efforts to achieve a reduction of the amount of hazardous wastes or other wastes subject to transboundary movement;

(c) Information on the measures adopted by them in implementation of this Convention;

(d) Information on available qualified statistics which have been compiled by them on the effects on human health and the environment of the generation, transportation and disposal of hazardous wastes or other wastes;

(e) Information concerning bilateral, multilateral and regional agreements and arrangements entered into pursuant to Article 11 of this Convention;

(f) Information on accidents occurring during the transboundary movement and disposal of hazardous wastes and other wastes and on the measures undertaken to deal with them;

(g) Information on disposal options operated within the area of their national jurisdiction;

(h) Information on measures undertaken for development of technologies for the reduction and/or elimination of production of hazardous wastes and other wastes; and

(i) Such other matters as the Conference of the Parties shall deem relevant.

4. The Parties, consistent with national laws and regulations, shall ensure that copies of each notification concerning any given transboundary movement of hazardous wastes or other wastes, and the response to it, are sent to the Secretariat when a Party considers that its environment may be affected by that transboundary movement has requested that this should be done.

Article 14

Financial Aspects

1. The Parties agree that, according to the specific needs of different regions and subregions, regional or sub-regional centres for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation should be established. The Parties shall decide on the establishment of appropriate funding mechanisms of a voluntary nature.

2. The Parties shall consider the establishment of a revolving fund to assist on an interim basis in case of emergency situations to minimize damage from accidents arising from transboundary movements of hazardous wastes and other wastes or during the disposal of those wastes.

Article 15

Conference of the Parties

1. A Conference of the Parties is hereby established. The first meeting of the Conference of the Parties shall be convened by the Executive Director of UNEP not later than one year after the entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be determined by the Conference at its first meeting.

2. Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to them by the Secretariat, it is supported by at least one third of the Parties.

3. The Conference of the Parties shall by consensus agree upon and adopt rules of procedure for itself and for any subsidiary body it may establish, as well as financial rules to determine in particular the financial participation of the Parties under this Convention.

4. The Parties at their first meeting shall consider any additional measures needed to assist them in fulfilling their responsibilities with respect to the protection and the preservation of the marine environment in the context of this Convention.

5. The Conference of the Parties shall keep under continuous review and evaluation the effective implementation of this Convention, and, in addition, shall:

(a) Promote the harmonization of appropriate policies, strategies and measures for minimizing harm to human health and the environment by hazardous wastes and other wastes;

(b) Consider and adopt, as required, amendments to this Convention and its annexes, taking into consideration, *inter alia*, available scientific, technical, economic and environmental information;

(c) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention in the light of experience gained in its operation and in the operation of the agreements and arrangements envisaged in Article 11;

(d) Consider and adopt protocols as required; and

(e) Establish such subsidiary bodies as are deemed necessary for the implementation of this Convention.

6. The United Nations, its specialized agencies, as well as any State not party to this Convention, may be represented as observers at meetings of the Conference of the Parties. Any other body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to hazardous wastes or other wastes which has informed the Secretariat of its wish to be represented as an observer at a meeting of the Conference of the Parties, may be admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

7. The Conference of the Parties shall undertake three years after the entry into force of this Convention, and at least every six years thereafter, an evaluation of its effectiveness and, if deemed necessary, to consider the adoption of a complete or partial ban of transboundary movements of hazardous wastes and other wastes in light of the latest scientific, environmental, technical and economic information.

Article 16

Secretariat

1. The functions of the Secretariat shall be:

(a) To arrange for and service meetings provided for in Articles 15 and 17;

(b) To prepare and transmit reports based upon information received in accordance with Articles 3, 4, 6, 11 and 13 as well as upon information derived from meetings of subsidiary bodies established under Article 15 as well as upon, as appropriate, information provided by relevant intergovernmental and non-governmental entities;

(c) To prepare reports on its activities carried out in implementation of its functions under this Convention and present them to the Conference of the Parties;

(d) To ensure the necessary coordination with relevant international bodies, and in particular to enter into such administrative and contractual arrangements as may be required for the effective discharge of its functions;

(e) To communicate with focal points and competent authorities established by the Parties in accordance with Article 5 of this Convention;

(f) To compile information concerning authorized national sites and facilities of Parties available for the disposal of their hazardous wastes and other wastes and to circulate this information among Parties;

(g) To receive and convey information from and to Parties on;

—sources of technical assistance and training;

—available technical and scientific know-how;

—sources of advice and expertise; and

—availability of resources

with a view to assisting them, upon request, in such areas as:

—the handling of the notification system of this Convention;

—the management of hazardous wastes and other wastes;

—environmentally sound technologies relating to hazardous wastes and other wastes, such as low- and non-waste technology;

—the assessment of disposal capabilities and sites;

—the monitoring of hazardous wastes and other wastes; and

—emergency responses;

(h) To provide Parties, upon request, with information on consultants or consulting firms having the necessary technical competence in the field, which can assist them to examine a notification for a transboundary movement, the concurrence of a shipment of hazardous wastes or other wastes with the relevant notification, and/or the fact that the proposed disposal facilities for hazardous wastes or other wastes are environmentally sound, when they have reason to believe that the wastes in question will not be managed in an environmentally sound manner. Any such examination would not be at the expense of the Secretariat;

(i) To assist Parties upon request in their identification of cases of illegal traffic and to circulate immediately to the Parties concerned any information it has received regarding illegal traffic;

(j) To co-operate with Parties and with relevant and competent international organizations and agencies in the provision of experts and equipment for the purpose of rapid assistance to States in the event of an emergency situation; and

(k) To perform such other functions relevant to the purposes of this Convention as may be determined by the Conference of the Parties.

2. The secretariat functions will be carried out on an interim basis by UNEP until the completion of the first meeting of the Conference of the Parties held pursuant to Article 15.

3. At its first meeting, the Conference of the Parties shall designate the Secretariat from among those existing competent intergovernmental organizations which have signified their willingness to carry out the secretariat functions under this Convention. At this meeting, the Conference of the Parties shall also evaluate the implementation by the interim Secretariat of the functions assigned to it, in particular under paragraph 1 above, and decide upon the structures appropriate for those functions.

Article 17

Amendment of the Convention

1. Any Party may propose amendments to this Convention and any Party to a protocol may propose amendments to that protocol. Such amendments shall take due account, *inter alia*, of relevant scientific and technical considerations.

2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption. The Secretariat shall also communicate proposed amendments to the Signatories to this Convention for information.

3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting, and shall be submitted by the Depository to all Parties for ratification, approval, formal confirmation or acceptance.

4. The procedure mentioned in paragraph 3 above shall apply to amendments to any protocol, except that a two-thirds majority of the Parties to that protocol present and voting at the meeting shall suffice for their adoption.

5. Instruments of ratification, approval, formal confirmation or acceptance of amendments shall be deposited with the Depository. Amendments adopted in accordance with paragraphs 3 or 4 above shall enter into force between Parties having accepted them on the ninetieth day after the receipt by the Depository of their instrument of ratification, approval, formal confirmation or acceptance by at least three-fourths of the Parties who accepted the amendments to the protocol concerned, except as may otherwise be provided in such protocol. The amendments shall enter into force for any other Party on the ninetieth day after that Party deposits its instrument of ratification, approval, formal confirmation or acceptance of the amendments.

6. For the purpose of this Article, *Parties present and voting* means Parties present and casting an affirmative or negative vote.

Article 18

Adoption and Amendment of Annexes

1. The annexes of this Convention or to any protocol shall form an integral part of this Convention or of such protocol, as the case may be and, unless expressly provided otherwise, a reference to this Convention or its protocols constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to scientific, technical and administrative matters.

2. Except as may be otherwise provided in any protocol with respect to its annexes, the following procedure shall apply to the proposal, adoption and entry into force of additional annexes to this Convention or of annexes to a protocol:

(a) Annexes to this Convention and its protocols shall be proposed and adopted according to the procedure laid down in Article 17, paragraphs 2, 3 and 4;

(b) Any Party that is unable to accept an additional annex to this Convention or an

annex to any protocol to which it is party shall so notify the Depository, in writing, within six months from the date of the communication of the adoption by the Depository. The Depository shall without delay notify all Parties of any such notification received. A Party may at any time substitute an acceptance for a previous declaration of objection and the annexes shall thereupon enter into force for that Party;

(c) On the expiry of six months from the date of the circulation of the communication by the Depository, the annex shall become effective for all Parties to this Convention or to any protocol concerned, which have not submitted a notification in accordance with the provision of subparagraph (b) above.

3. The proposal, adoption and entry into force of amendments to annexes to this Convention or to any protocol shall be subject to the same procedure as for the proposal, adoption and entry into force of annexes to the Convention or annexes to a protocol. Annexes and amendments thereto shall take due account, *Inter alia*, of relevant scientific and technical considerations.

4. If an additional annex or an amendment to an annex involves an amendment to this Convention or to any protocol, the additional annex or amended annex shall not enter into force until such time as the amendment to this Convention or to the protocol enters into force.

Article 19

Verification

Any Party which has reason to believe that another Party is acting or has acted in breach of its obligations under this Convention may inform the Secretariat thereof, and in such an event, shall simultaneously and immediately inform, directly or through the Secretariat, the Party against whom the allegations are made. All relevant information should be submitted by the Secretariat to the Parties.

Article 20

Settlement of Disputes

1. In case of a dispute between Parties as to the interpretation or application of, or compliance with, this Convention or any protocol thereto, they shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.

2. If the Parties concerned cannot settle their dispute through means mentioned in the preceding paragraph, the dispute, if the parties to the dispute agree, shall be submitted to the International Court of Justice or to arbitration under the conditions set out in Annex VI on Arbitration. However, failure to reach common agreement on submission of the dispute to the International Court of Justice or to arbitration shall not absolve the Parties from the responsibility of continuing to seek to resolve it by the means referred to in paragraph 1.

3. When ratifying, accepting, approving, formally confirming or acceding to this Convention, or at any time thereafter, a State or political and/or economic integration organization may declare that it recognizes as compulsory *ipso facto* and without special agreement, in relation to any Party accepting the same obligation:

(a) submission of the dispute to the International Court of Justice; and/or

(b) arbitration in accordance with the procedures set out in Annex VI.

Such declaration shall be notified in writing to the Secretariat which shall communicate it to the Parties.

Article 21

Signature

This Convention shall be open for signature by States, by Namibia, represented by the United Nations Council for Namibia, and by political and/or economic integration organizations in Basel on 22 March 1989, at the Federal Department of Foreign Affairs of Switzerland in Berne from 23 March 1989 to 30 June 1989, and an United Nations Headquarters in New York from 1 July 1989 to 22 March 1990.

Article 22

Ratification, Acceptance, Formal Confirmation or Approval

1. This Convention shall be subject to ratification, acceptance or approval by States and by Namibia, represented by the United Nations Council for Namibia, and to formal confirmation or approval by political and/or economic integration organizations. Instruments of ratification, acceptance, formal confirmation, or approval shall be deposited with the Depositary.

2. Any organization referred to in paragraph 1 above which becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of formal confirmation or approval, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who will inform the Parties of any substantial modification in the extent of their competence.

Article 23

Accession

1. This Convention shall be open for accession by States, by Namibia, represented by the United Nations Council for Namibia, and by political and/or economic integration organizations from the day after the date on which the Convention is closed for signature. The instruments of accession shall be deposited with the Depositary.

2. In their instruments of accession, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary of any substantial modification in the extent of their competence.

3. The provisions of Article 22, paragraph 2, shall apply to political and/or economic integration organizations which accede to this Convention.

Article 24

Right to Vote

1. Except as provided for in paragraph 2 below, each Contracting Party to this Convention shall have one vote.

2. Political and/or economic integration organizations, in matters within their competence, in accordance with Article 22, paragraph 3, and Article 33, paragraph 2, shall exercise their right to vote with a number of votes equal to the number of their member States which are Parties to the Convention or the relevant protocol. Such organizations shall not exercise their right to vote in their member States exercise theirs, and vice versa.

Article 25

Entry into Force

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the twentieth instrument of ratification, acceptance, formal confirmation, approval or accession.

2. For each State or political and/or economic integration organization which ratifies, accepts, approves or formally confirms this Convention or accedes thereto after the date of the deposit of the twentieth instrument of ratification, acceptance, approval, formal confirmation or accession, it shall enter into force on the ninetieth day after the date of deposit by such State or political and/or economic integration organization of its instrument of ratification, acceptance, approval, formal confirmation or accession.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a political and/or economic integration organization shall not be counted as additional to those deposited by member States of such organization.

Article 26

Reservations and Declarations

1. No reservation or exception may be made to this Convention.

2. Paragraph 1 of this Article does not preclude a State or political and/or economic integration organizations, when signing, ratifying, accepting, approving, formally confirming or acceding to this Convention, from making declarations or statements, however phrased or named, with a view, *inter alia*, to the harmonization of its laws and regulations with the provisions of this Convention, provided that such declarations or statements do not purport to exclude or to modify the legal effects of the provisions of the Convention in their application to that State.

Article 27

Withdrawal

1. At any time after three years from the date on which this Convention has entered into force for a Party, that Party may

withdraw from the Convention by giving written notification to the Depositary.

2. Withdrawal shall be effective one year from receipt of notification by the Depositary, or on such later date as may be specified in the notification.

Article 28

Depositary

The Secretary-General of the United Nations shall be the Depositary of this Convention and of any protocol thereto.

Article 29

Authentic Texts

The original Arabic, Chinese, English, French, Russian and Spanish texts of this Convention are equally authentic.

In Witness Whereof the undersigned, being duly authorized to that effect, have signed this Convention.

Done at _____ on the _____ day of _____

Annex I

Categories of Wastes to be Controlled

Waste Streams

Y1 Clinical wastes from medical care in hospitals, medical centers and clinics
Y2 Wastes from the production and preparation of pharmaceutical products
Y3 Waste pharmaceuticals, drugs and medicines
Y4 Wastes from the production, formulation and use of biocides and phytopharmaceuticals
Y5 Wastes from the manufacture, formulation and use of wood preserving chemicals
Y6 Wastes from the production, formulation and use of organic solvents
Y7 Wastes from heat treatment and tempering operations containing cyanides
Y8 Waste mineral oils unfit for their originally intended use
Y9 Waste oils/water, hydrocarbons/water mixtures, emulsions
Y10 Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)
Y11 Waste tarry residues arising from refining, distillation and any pyrolytic treatment
Y12 Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish
Y13 Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives
Y14 Waste chemical substances arising from research and development or teaching activities which are not identified and/or new and whose effects on man and/or the environment are not known
Y15 Wastes of an explosive nature not subject to other legislation
Y16 Wastes from production, formulation and use of photographic chemicals and processing materials
Y17 Wastes resulting from surface treatment of metals and plastics
Y18 Residues arising from industrial waste disposal operations

Wastes Having as Constituents

Y19 Metal carbonyls
Y20 Beryllium; beryllium compounds
Y21 Hexavalent chromium compounds
Y22 Copper compounds
Y23 Zinc compounds
Y24 Arsenic; arsenic compounds
Y25 Selenium; selenium compounds
Y26 Cadmium; cadmium compounds
Y27 Antimony; antimony compounds
Y28 Tellurium; tellurium compounds
Y29 Mercury; mercury compounds
Y30 Thallium; thallium compounds
Y31 Lead; lead compounds
Y32 Inorganic fluorine compounds excluding calcium fluoride
Y33 Inorganic cyanides
Y34 Acidic solutions or acids in solid form
Y35 Basic solutions or bases in solid form
Y36 Asbestos (dust and fibres)
Y37 Organic phosphorous compounds
Y38 Organic cyanides
Y39 Phenols; phenol compounds including chlorophenols
Y40 Ethers
Y41 Halogenated organic solvents
Y42 Organic solvents excluding halogenated solvents
Y43 Any congenor of polychlorinated dibenzo-furan
Y44 Any congenor of polychlorinated dibenzo-p-dioxin
Y45 Organohalogen compounds other than substances referred to in this Annex (e.g., Y39, Y41, Y42, Y43, Y44).

Annex II

Categories of Wastes Requiring Special Consideration

Y46 Wastes collected from households
Y47 Residues arising from the incineration of household wastes

Annex III

List of Hazardous Characteristics

UN class *	Code characteristics
1	H1 Explosive An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.
3	H3 Flammable liquids The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapor at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.6°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.)
4.1	H4.1 Flammable solids Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
4.2	H4.2 Substances or wastes liable to spontaneous combustion Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
4.3	H4.3 Substances or wastes which, in contact with water emit flammable gases

UN class [1]	Code characteristics
	Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.
5.1	H5.1 Oxidizing Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.
5.2	H5.2 Organic Peroxides Organic substances or wastes which contain the bivalent-O-O-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.
6.1	H6.1 Poisonous (Acute) Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.
6.2	H6.2 Infectious substances Substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans.
8	H8 Corrosives Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
9	H10 Liberation of toxic gases in contact with air or water Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
9	H11 Toxic (Delayed or chronic) Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity.
9	H12 Ecotoxic Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.
9	H13 Capable, by any means, after disposal, of yielding another material, e.g., leakage, which possesses any of the characteristics listed above.

[1] Corresponds to the hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/REV.5, United Nations, New York, 1988).

Tests

The potential hazards posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterize potential hazards posed to man and/or the environment by these wastes. Standardized tests have been derived with respect to pure substances and materials. Many countries have developed national tests which can be applied to materials listed in Annex I, in order to decide if these materials exhibit any of the characteristics listed in this Annex.

Annex IV

Disposal Operations

A. Operations Which do not Lead to the Possibility of Resource Recovery, Recycling, Reclamation, Direct Re-use or Alternative Uses

Section A encompasses all such disposal operation which occur in practice.

D1 Deposit into or onto land, (e.g., landfill, etc.)
D2 Land treatment, (e.g., biodegradation of liquid or sludgy discards in soils, etc.)
D3 Deep injection, (e.g., injection of pumpable discards into walls, salt domes or naturally occurring repositories, etc.)
D4 Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)
D5 Specially engineered landfill, (e.g., placement into lined discrete cells which are capped and isolated from one another and the environment, etc.)
D6 Release into a water body except seas/oceans
D7 Release into seas/oceans including seabed insertion
D8 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A
D9 Physico chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A, (e.g., evaporation, drying, calcination, neutralisation, precipitation, etc.)
D10 Incineration on land
D11 Incineration at sea
D12 Permanent storage (e.g., emplacement of containers in a mine, etc.)
D13 Blending or mixing prior to submission to any of the operations in Section A
D14 Repackaging prior to submission to any of the operations in Section A
D15 Storage pending any of the operations in Section A

B. Operations Which May Lead to Resource Recovery, Recycling, Reclamation, Direct Reuse or Alternative Uses

Section B encompasses all such operations with respect to materials legally defined as or considered to be hazardous wastes and which otherwise would have been destined for operations included in Section A.

R1 Use as a fuel (other than in direct incineration) or other means to generate energy
R2 Solvent reclamation/regeneration
R3 Recycling/reclamation of organic substances which are not used as solvents
R4 Recycling/reclamation of metals and metal compounds
R5 Recycling/reclamation of other inorganic materials
R6 Regeneration of acids or bases
R7 Recovery of components used for pollution abatement
R8 Recovery of components from catalysts
R9 Used oil re-refining or other reuses of previously used oil
R10 Land treatment resulting in benefit to agriculture or ecological improvement
R11 Uses of residual materials obtained from any of the operations numbered R1–R10
R12 Exchange of wastes for submission to any of the operations numbered R1–R11
R13 Accumulation of material intended for any operation in Section B

Annex V A

Information To Be Provided on Notification

1. Reason for waste export.
2. Exporter of the waste.[1]
3. Generator(s) of the waste and site of generation.[1]
4. Disposer of the waste and actual site of disposal.[1]
5. Intended carrier(s) of the waste or their agents, if known.[1]
6. Country of export of the waste Competent authority.[2]
7. Expected countries of transit Competent authority.[2]
8. Country of import of the waste Competent authority.[2]
9. General or single notification.
10. Projected date(s) of shipment(s) and period of time over which waste is to be exported and proposed itinerary (including point of entry and exit).[3]
11. Means of transport envisaged (road, rail, sea, air, inland waters).
12. Information relating to insurance.[4]
13. Designation and physical description of the waste including Y number and UN number and its composition [5] and information on any special handling requirements including emergency provisions in case of accidents.
14. Type of packaging envisaged (eg. bulk, drummed, tanker).
15. Estimated quantity in weight/volume.[6]
16. Process by which the waste is generated.[7]
17. For wastes listed in Annex I, classifications from Annex II: hazardous characteristic, N number, and UN class.
18. Method of disposal as per Annex III.
19. Declaration by the generator and exporter that the information is correct.
20. Information transmitted (including technical description of the plant) to the exporter or generator from the disposer of the waste upon which the latter has based his assessment that there was no reason to believe that the wastes will not be managed

in an environmentally sound manner in accordance with the laws and regulations of the country of import.

21. Information concerning the contract between the exporter and disposer.

Notes

[1] Full name and address, telephone, telex or telefax number and the name, address, telephone, telex or telefax number of the person to be contacted.

[2] Full name and address, telephone, telex or telefax number.

[3] In the case of a general notification covering several shipments, either the expected dates of each shipment or, if this is not known, the expected frequency of the shipments will be required.

[4] Information to be provided on relevant insurance requirements and how they are met by exporter, carrier and disposer.

[5] The nature and the concentration of the most hazardous components, in terms of toxicity and other dangers presented by the waste both in handling and in relation to the proposed disposal method.

[6] In the case of a general notification covering several shipments, both the estimated total quantity and the estimated quantities for each individual shipment will be required.

[7] Insofar as this is necessary to assess the hazard and determine the appropriateness of the proposed disposal operation.

Annex V B

Information To Be Provided on the Movement Document

1. Exporter of the waste.[1]

2. Generator(s) of the waste and site of generation.[1]

3. Disposer of the waste and actual site of disposal.[1]

4. Carrier(s) of the waste [1] or his agent(s).

5. Subject of general or single notification.

6. The date the transboundary movement started and date(s) and signature on receipt by each person who takes charge of the waste.

7. Means of transport (road, rail, inland waterway, sea, air) including countries of export, transit and import, also point of entry and exit where these have been designated).

8. General description of the waste (physical state, proper UN shipping name and class, UN number, Y number and H number as applicable).

9. Information on special handling requirements including emergency provision in case of accidents.

10. Type and number of packages.

11. Quantity in weight/volume.

12. Declaration by the generator or exporter that the information is correct.

13. Declaration by the generator or exporter indicating no objection from the competent authorities of all States concerned which are Parties.

14. Certification by disposer of receipt at designated disposal facility and indication of method of disposal and of the approximate date of disposal.

Notes

The information required on the movement document shall where possible be integrated in one document with that required under transport rules. Where this is not possible the information should complement rather than duplicate that required under the transport rules. The movement document shall carry instructions as to who is to provide information and fill-out any form.

[1] Full name and address, telephone, telex or telefax number and the name, address, telephone, telex or telefax number of the person to be contacted in case of emergency.

Annex VI

Arbitration

Article 1

Unless the agreement referred to in Article 20 of the Convention provides otherwise, the arbitration procedure shall be conducted in accordance with Articles 2 to 10 below.

Article 2

The claimant party shall notify the Secretariat that the parties have agreed to submit the dispute to arbitration pursuant to paragraph 2 or paragraph 3 of Article 20 and include, in particular, the Articles of the Convention the interpretation or application of which are at issue. The Secretariat shall forward the information thus received to all Parties to the Convention.

Article 3

The arbitral tribunal shall consist of three members. Each of the Parties to the dispute shall appoint an arbitrator, and the two arbitrators so appointed shall designate by common agreement the third arbitrator, who shall be the chairman of the tribunal. The latter shall not be a national of one of the parties to the dispute, nor have his usual place of residence in the territory of one of these parties nor be employed by any of them, nor have dealt with the case in any other capacity.

Article 4

1. If the chairman of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the Secretary-General of the United Nations shall, at the request of either party, designate him within a further two months period.

2. If one of the parties to the dispute does not appoint an arbitrator within two months of the receipt of the request, the other party may inform the Secretary-General of the United Nations who shall designate the chairman of the arbitral tribunal within a further two months' period. Upon designation, the chairman of the arbitral tribunal shall request the party which has not appointed an arbitrator to do so within two months. After such period, he shall inform the Secretary-General of the United Nations, who shall make this appointment within a further two months' period.

Article 5

1. The arbitral tribunal shall render its decision in accordance with international law and in accordance with the provisions of the Convention.

2. Any arbitral tribunal constituted under the provisions of this Annex shall draw up its own rules of procedure.

Article 6

1. The decisions of the arbitral tribunal both on procedure and on substance, shall be taken by majority vote of its members.

2. The tribunal may take all appropriate measures in order to establish the facts. It may, at the request of one of the parties, recommend essential interim measures of protection.

3. The parties to the dispute shall provide all facilities necessary for the effective conduct of the proceedings.

4. The absence or default of a party in the dispute shall not constitute an impediment to the proceedings.

Article 7

The tribunal may hear and determine counter-claims arising directly out of the subject-matter of the dispute.

Article 8

Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the expenses of the tribunal, including the remuneration of its members, shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its expenses, and shall furnish a final statement thereof to the parties.

Article 9

Any Party that has an interest of a legal nature in the subject-matter of the dispute which may be affected by the decision in the case, may intervene in the proceedings with the consent of the tribunal.

Article 10

1. The tribunal shall render its award within five months of the date on which it is established unless it finds it necessary to extend the time-limit for a period which should not exceed five months.

2. The award of the arbitral tribunal shall be accompanied by a statement of reasons. It shall be final and binding upon the parties to the dispute.

3. Any dispute which may arise between the parties concerning the interpretation or execution of the award may be submitted by either party to the arbitral tribunal which made the award or, if the latter cannot be seized thereof, to another tribunal constituted for this purpose in the same manner as the first.

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Wednesday
May 13, 1992

Part VI

Department of Education

Technology, Educational Media and Materials for Individuals With Disabilities Program; Notices

DEPARTMENT OF EDUCATION

Technology, Educational Media, and Materials for Individuals With Disabilities Program

AGENCY: Department of Education.

ACTION: Notice of final priorities.

SUMMARY: The Secretary announces final funding priorities for fiscal years 1992 and 1993 for the Technology, Educational Media, and Materials for Individuals with Disabilities Program. This program is administered by the Office of Special Education Programs. The Secretary announces these priorities to ensure effective use of program funds and to direct funds to areas of identified need during fiscal years 1992 and 1993.

EFFECTIVE DATE: These priorities take effect either 45 days after publication in the Federal Register or later if the Congress takes certain adjournments. If you want to know the effective date of these priorities, call or write the Department of Education contact person.

FOR FURTHER INFORMATION CONTACT: Linda Glidewell, U.S. Department of Education, 400 Maryland Avenue, SW. (Switzer Building, room 3095—M/S 2313–2640), Washington, DC 20202. Telephone: (202) 732–1099. Deaf and hearing impaired individuals may call (202) 732–6153 for TDD services.

SUPPLEMENTARY INFORMATION: The purpose of this program is to support projects and centers for advancing the availability, quality, use, and effectiveness of technology, educational media, and materials in the education of children and youth with disabilities and the provision of early intervention services to infants and toddlers with disabilities. In creating part G, Congress expressed the intent that the projects and centers funded under that part should be primarily for the purpose of enhancing research and development advances and efforts being undertaken by the public or private sector, and to provide necessary linkages to make more efficient and effective the flow from research and development to application.

These priorities support AMERICA 2000, the President's strategy for moving the Nation toward the National Education Goals, by improving services for infants, toddlers, children, and youth with disabilities and by so doing helping them to reach the high levels of academic achievement called for by the National Education Goals. Specifically, National Education Goal 1 calls for all children to start school ready to learn, and National Education Goal 3 calls for American students to demonstrate competency in challenging subject matter and to learn to use their minds well.

The publication of these final priorities does not preclude the Secretary from proposing additional priorities, nor does it limit the Secretary to funding only this priority, subject to meeting applicable rulemaking requirements.

Analysis of Comments and Changes

In response to the Secretary's invitation to comment in the Notice of Proposed Priorities, published on January 28, 1992 (57 FR 3260–3264), six respondents commented on the priorities for the Technology, Educational Media, and Materials Program for Individuals with Disabilities. No changes were made based on the comments. Only minor technical and editorial changes have been made. An analysis of the comments to the proposed priorities follows.

Comments on Priorities 1 and 2

Comment: One commenter recommended that both priority 1 "Innovative Applications of Technology to Enhance Experiences in the Arts for Children with Disabilities" and priority 2 "Studying How the Design of Software and Computer-Assisted Media and Materials Can Enhance the Instruction of Preschool Children with Disabilities" could be enhanced by requiring all funded projects to conduct their activities in integrated settings.

Discussion: As written, priorities 1 and 2 do not exclude an applicant from including children with disabilities in integrated settings. The Secretary believes that to require all applicants to conduct activities in integrated settings would be overly prescriptive.

Changes: None.

Comments on Priority 2: Studying How the Design of Software and Computer-Assisted Media and Materials Can Enhance the Instruction of Preschool Children with Disabilities.

Comment: One commenter suggested that for priority 2 one year might be a very short time frame to work on.

Discussion: The priority as written is not limited to a one year time frame. As stated in the notice, applicants may request up to 24 months of funding in their proposals.

Changes: None.

Comment: One commenter stated that it is important to think about what schools already have in place, and that it should not be assumed that people will buy hardware along with the product. The commenter felt that people may want software that matches their existing hardware.

Discussion: The priority as written does not presume that people will buy hardware along with the product. The priority is designed to evaluate existing software for young children with disabilities which presumes the software matches the hardware used by teachers.

Changes: None.

Comment: One commenter recommended that various options should be considered such as SEGA Genesis games that have MAC-like capabilities for $100, and that video game technology may be an option. In addition, the commenter recommended that a market perspective might be very useful for this effort.

Discussion: The Secretary agrees that building on existing capabilities can enhance the impact of priorities designed to develop actual software. Examining existing software and recommending guidelines for potential development may include consideration of such software and hardware as the SEGA Genesis games. As written, the priority requires the involvement of developers and publishers from the beginning of the projects, and the Secretary believes that involvement will ensure a market perspective.

Changes: None.

Comments on Priority 3: Demonstrating and Evaluating the Benefits of Educational Innovations Using Technology

Comment: One commenter recommended that the following three questions be added:

(1) In what ways did the use or application of technology enhance opportunities for interaction between children with disabilities and their nondisabled peers?

(2) In what ways did the use or application of technology result in classroom placement in a regular classroom?

(3) What are the implementation conditions that would result in enhanced integrated placement and learning situations?

Discussion: The three questions suggested by the commenter are encompassed in the questions already stated in the "Project Design" section of the priority. Opportunities for interaction with nondisabled peers and placement in regular classrooms are encompassed in the "other benefits" referred to in the third question in the proposed priority. Implementation

conditions that result in enhanced integrated placement and learning situations are encompassed in the fifth question in the proposed priority, which refers to implementation conditions and outcomes. The questions stated in the priority are intended to provide direction to the projects without being overly restrictive. They are deliberately general and inclusive.

Changes: The questions in the priority have been expanded to clarify that the questions suggested by the commenter are included.

Comment: One commenter urged the Department to require funding one of the four projects under priority 3 to a target group of children with speech and motor challenges. The commenter felt that children with speech and motor challenges constitute a population that is dramatically benefitting from technology intervention, and the funding of projects targeted at those groups would provide empirical data needed by school districts nationwide. Another commenter recommended that every effort be made to ensure that projects that focus on low incidence populations such as visually disabled and motorically impaired are not "shut out" of the competition just because these children are fewer in number in the school population, and the perceived impact is considered to be low.

Discussion: The need for research on the benefits of technology applies to all special education populations. The Secretary does not believe it is appropriate to impose preset quotas or limits for projects targeted at specific types of disabilities. Projects are funded on the basis of evaluation criteria which allow applicants to discuss the importance and impact of their projects in relation to specific types of disabilities. Reviewers score applications based on their response to the evaluation criteria, and it has been the experience of the Department that low incidence populations are not automatically "shut out" of any competition.

Changes: None.

Comment: Four commenters recommended that assistive devices should be included under the rubric of "innovative instructional technology" which they say is the focus of priority 3. If assistive devices or technology is prohibited, three of the four commenters pointed out that a large portion of disabled youngsters (e.g., blind, visually impaired, and motorically impaired) could be excluded from any projects which may be funded.

Discussion: The stated topic of this priority is innovative uses of technology to improve the education and learning potential of children with disabilities. Assistive technology may be included under innovative uses of technology. As written, the priority is broad enough to include study of assistive devices and technology.

Changes: None.

Comment: Two commenters recommended that projects should not be limited to sites where advanced, innovative technology is already in place. The commenters felt that the Department should encourage applicants to develop concepts and strategies which may not as yet be found in the schools, but which could prove to be very beneficial to disabled children.

Discussion: The Technology, Educational Media, and Materials for Individuals with Disabilities Program supports a range of projects, some of which involve the development of new concepts and strategies which are not found in schools. However, the Secretary believes the specific purposes of priority 3 (to demonstrate, evaluate, and document the uses of technology under optimal conditions) will be served in the most cost effective manner if projects are conducted in sites where innovative technology is already sufficiently available and accessible.

Changes: None.

Priorities

The Secretary establishes the following priorities for the Technology, Educational Media, and Materials for Individuals with Disabilities Program, CFDA No. 84.180. In accordance with the Education Department General Administrative Regulations (EDGAR, 34 CFR 75.105(c)(3)), the Secretary gives an absolute preference under this program to applications that respond to one of the following priorities; that is, the Secretary selects for funding only those applications proposing projects that meet one of these priorities.

Priority 1: Innovative Applications of Technology to Enhance Experiences in the Arts for Children with Disabilities (CFDA 84.180D)

Issue

The quality of life is based on more than the acquisition of factual knowledge and the development of vocational skills; it includes experiences that maximize human potential and provide self-fulfillment. One important avenue to this enrichment can be found in the arts. Through artistic expression and appreciation, students gain a broader and deeper understanding of human culture and the significance of their own imagination.

In the past, the creativity and self-expression of individuals with disabilities have often been untapped due to sensory, motor, or cognitive barriers. Alternatively, new technologies offer the potential to enable and enhance artistic experiences, and related learning and development, for children with disabilities. However, these technologies have neither been sufficiently adapted to special needs, nor made readily available, to adequately provide opportunities for artistic enrichment.

For example, specialized input and output devices have become available to enable access to computers by individuals with various disabilities. Such products could be integrated with other hardware, software, and peripheral devices (e.g., braille printers, speech synthesizers, and touch pads) to produce graphic or musical output. Translation of acoustic signals into visual stimuli, or visual images into sound, offer exciting possibilities in the arts for individuals with sensory impairments. Artificial intelligence, robotics, expert systems, multi-media controllers, speech recognition and synthesis, alternative input or output mechanisms, and other emerging technologies present a seemingly limitless palette for creative solutions to previously limiting conditions. Innovative technologies can be developed, modified, or adapted to encourage the creativity, self-expression, and participation in artistic experiences by children with disabilities.

The school, home, and community experiences of children with disabilities would be greatly enriched by improving technologies to support learning and expression through the arts and increasing their accessibility to students, parents, teachers, and related services personnel. Expanding artistic opportunities would contribute to healthy development and learning in childhood, and strengthen the foundation for transition to adult life and experiences.

Purpose

Section 661 of the Individuals with Disabilities Education Act (IDEA) supports projects to advance the availability, quality, and use of technology, media, and materials in the education of children with disabilities. The purpose of this priority is to fund grants for the development, modification, or adaptation of innovative technologies to enhance experiences in the arts for children with disabilities. For this competition, the

arts are defined as synonymous with what are generally called the fine arts, and include but are not limited to the following: Music, painting, drawing, graphics, photography (including film and video), sculpture, dance, and drama.

Activities

Each project must engage in multiple activities to develop, evaluate, refine, and disseminate a prototype application of innovative technology in the arts that addresses particular needs of children with disabilities. The planned activities must also include production of supplemental materials to foster effective implementation by teachers, related services staff, and parents, in school, home, or community settings. The outcome of each project must be a marketable prototype, including supplemental materials, along with active exchange, dissemination, and use of findings from the project.

(1) Specific Objectives

Each project must provide for the development, modification, or adaptation of innovative technology, and address the specific needs of particular groups of children with disabilities to enhance their experiences in the arts. The application of technology must provide a means for expression through the arts, and must also provide an opportunity for learning and appreciation. The project must reflect the judgment and knowledge of specialists in the arts and special education service providers and recipients. Benefits and outcomes in other areas of learning, development, and socialization must also be provided.

(2) Develop Prototype Application and Supplemental Materials

Each project must develop, modify, or adapt innovative technology to enhance the child's direct experience in artistic expression. The technological application must include an implementation package that incorporates guidelines, related materials, and training to support its integration into artistic activities in school, home, or community settings.

(3) Evaluation

Field tests must be designed and conducted to both: (a) Measure and document outcomes and benefits, including solutions to specific needs, with groups of children with particular disabilities, and (b) formatively evaluate the prototype application, guidelines, related materials, and training provided to foster effective use.

(4) Refinement of the Final Product

Results of the evaluations must be utilized to refine the prototype and supplemental materials, in order to produce a marketable prototype with needed guidelines, training approaches, and related materials.

(5) Dissemination

Dissemination must be designed and conducted to publicize the findings from the evaluations; to stimulate interest in the product from teachers, administrators, arts education specialists and associations, and other program providers; to encourage investment from the private sector; and to draw attention to the arts as an important area for the development of the full human potential of children with disabilities.

Time Frame

The Secretary will approve grants with a project period of 24 months subject to the requirements of 34 CFR 75.253(a) for continuation awards. Activities in the first year must include prototype and supplemental material development, and design of field tests and dissemination. Evaluation may begin in the first year, if that is feasible. Activities in the second year must include training and completion of evaluation, product refinement (prototype and materials), and dissemination.

Product

The outcome of each project must be a marketable prototype of an application of innovative technology to enhance experiences in the arts for children with disabilities, along with supplemental materials to support its implementation, and active exchange, dissemination, and use of findings from the project to encourage adoption of the technology.

Priority 2: Studying How The Design of Software and Computer-Assisted Media and Materials Can Enhance The Instruction of Preschool Children With Disabilities (CFDA 84.180F)

Issue

Instructional technology seems a promising tool to enhance the learning processes of young children (ages three through five) with disabilities. Preliminary evidence indicates that the use of software and computer-assisted media and materials based on sound developmental and educational principles has the potential to provide young children with disabilities early opportunities and experiences in thinking and problem solving strategies that are the foundation and building blocks that enable future learning. The use of the phrase "software and computer-assisted media and materials" is used broadly to refer not only to traditional software but also to the use of newer technologies such as videodisc and multimedia. Effectively designed software and computer-assisted media and materials also have potential to aid preschool teachers and related service professionals and to enhance the development and learning of preschool children with disabilities. Yet, while there is a body of research regarding micro-computer-based instruction in schools, little of it has been implemented with preschool children. The recent application of microcomputers with preschool children has not yet produced a body of literature on development and learning gains by preschoolers as a result of technology use.

Instructional technology is most effective when it is both age- and content-appropriate. Finding and selecting appropriate software and computer-assisted media and materials for young children presents a dilemma. Despite advances in our knowledge about how young students with disabilities in early stages of development process information, finding a match between those elements and currently available software and computer-assisted media and materials is problematic. Developmental, cultural, and learning differences among children, readiness to learn new concepts, and the appropriate sequencing of concepts all require consideration in selection of software and computer-assisted media and materials.

Even if teachers did have ready access to age-appropriate material, they still face the problem of how to integrate available software and computer-assisted media and materials into their instruction and interventions. Some computer-assisted media and materials may be difficult to use or have no accompanying materials to serve as a guide. Therefore, potentially effective designs need to maximize the learning capabilities of children, and the instructional goals of teachers by making the technology relevant to their instructional approach, easy to use, and adaptable to individual children's needs.

Purpose

This priority will provide support for up to five projects to study the potential of the design of software and computer-assisted media and materials to enhance the development, learning, and instruction of young (3–5) children with disabilities. Projects must study design

elements of existing software and computer-assisted media and materials that could be adapted to the special developmental, learning, and instructional needs of young children with disabilities, and must document evidence of its effectiveness in meeting these needs.

Activities

Analyze Needs of Children and Preschool or Day Care Professionals

The projects first must identify and conduct a comprehensive analysis of the learner characteristics (sensory, cognitive, and physical) of a disability. The projects then must analyze the developmental, learning, and instructional needs of young children with disabilities and the diversity of instructional approaches used by teachers and related services personnel. Each project must develop, pilot, and implement reliable and valid methods for determining needs and translating them into design specifications. The projects must also analyze the context of the setting in which the technology is to be used and the design features and components that should be present to meet the needs.

Analyze Existing Software and Computer-Assisted Media and Materials

Based on the documented needs and learning characteristics of young children, the instructional approaches of teachers and related service professionals, and the contextual features of the setting, the projects will analyze features of existing software and computer-assisted media and materials that have potential for being adapted to enhance the development, learning, and instruction of young children with disabilities. The projects must develop and test their criteria for assessing the feasibility and utility of the design features of existing software and computer-assisted media and materials. Each project must develop a methodology for identifying existing software design features to analyze their feasibility and potential. Based on these analyses, an initial list of design specifications must be developed and mapped against current designs of software and computer-assisted media and materials.

Evaluate The Design Features of Software and Computer-Assisted Media and Materials

Field tests must be conducted to measure and document the contribution of the design features of the software and computer-assisted media and materials to the development, learning, and instruction of young children with disabilities. In testing various design features, the projects will study how well the software computer-assisted media and materials enhance the development, learning, and instruction of young children of the specified disability group; how the features enhance teacher effectiveness and meaningful instruction; how effectively and smoothly these features can be integrated into existing interventions or instruction; any specific training necessary to foster their effective use; and the potential for such design features to be incorporated into future publisher products. In evaluating the existing software, or computer-assisted media and materials, multiple methodologies must be used to address the evaluation questions.

Guidelines

The projects will develop and field test guidelines for practitioners and guidelines for developers and publishers. Guidelines for practitioners must assist them in selecting software computer-assisted media and materials by specifying design features of software computer-assisted media and materials having the potential to enhance the instruction, development, and learning of young children with disabilities. Identifying design features will provide guidance to practitioners in selecting software computer-assisted media and materials to meet the needs of young children with disabilities. These guidelines must also include project findings regarding the development and learning needs of children with disabilities, the design specifications needed to address these needs, the intervention and instructional needs of teachers, and the enhancements such designs would make. Guidelines for developers and publishers of software and computer-assisted media and materials must specify the design features that align with the needs of young children with disabilities. These guidelines also must provide needed design guidance for future efforts to develop software and other computer-assisted media and materials.

To ensure that the guidelines are consistent with the developmental, learning, and instructional needs of the children with disabilities and with instructional and intervention needs, teachers and related service professionals must be involved throughout the analysis and guideline development process. In addition, persons with publishing and developing experience must be involved from the beginning in identifying instructional design features as well as providing feedback on potential market feasibility of various design configurations.

Collaboration

Projects must collaborate with one another in order to achieve a cumulative advancement in knowledge and practice potentially greater than that achieved by any single project. Projects must budget for two trips each year to Washington, DC, one of them to be at the time of the annual Research Project Directors' meeting in July and the other to be scheduled during the remainder of the year for this purpose.

Products and Dissemination

Projects must develop: (1) A set of guidelines to assist practitioners, and (2) a set of guidelines for developers and publishers of software computer-assisted media and materials. Projects must also collaborate and participate in the development and dissemination of joint findings across projects.

Priority 3: Demonstrating and Evaluating the Benefits of Educational Innovations Using Technology (CFDA 84.180E)

This priority will fund grants that demonstrate and evaluate the benefits from innovative uses of technology in optimally supportive settings to improve the education and expand the learning potentials of children with disabilities.

Issue

Advocates for technological innovation want to challenge preconceptions about the potential functioning of children with disabilities, both in the classroom and in the world beyond. Numerous studies in the research literature, as well as accounts in the popular press, have described the apparent utility of various innovative technologies for the instruction of children, in both special and general education. Some examples include word processing and desk-top publishing, computer-assisted instruction and assessment, hypermedia (i.e., computer control of multiple media), local area networks and networked instructional management systems, telecommunications and distance learning, and various video-based systems (e.g., VCR's, cam-corders, interactive laser-disc or cd-rom).

Simultaneously, other reports have identified and examined an array of organizational, professional, and material factors that promote or impede the optimal use and impact of technological innovations in education.

These factors include, for example: The availability of special training and ongoing technical assistance for staff; administrative support and staff involvement in planning and implementing innovations; availability, accessibility, and suitability of equipment and materials; and congruence between the nature of the innovative application and the curricular and instructional needs of the students.

Related studies have shown that the needs of students with disabilities are sometimes ignored during school or district planning for technology acquisition. Equipment and resources are often unavailable or inadequate to meet the special needs of these students. Typically, special and general education staff have neither collaborated in decision making, nor been offered the particular guidance, training, or technical support necessary to make the most efficient or appropriate use of innovative educational technologies.

These conditions do not provide fair examinations or demonstrations of the potential benefits of new approaches for children with disabilities in the full range of educational settings. Lacking compelling and convincing examples of the potential value of technological enhancements in education, many administrators and teachers are understandably reluctant about adopting these new approaches. There is growing concern that the schools could pull back and lose interest in technological innovations before their full potential can be realized.

Even where successful examples of technology-assisted education have been conducted in particular classrooms, schools, or districts, additional evaluation is necessary to examine and document the features that contribute to effective use of innovative technologies. Refinement and modeling of such innovations are needed to provide compelling and convincing evidence of the benefits to be derived from these technology innovations.

Purpose

The purpose of the projects is to demonstrate, evaluate, and document innovative uses of technology, under optimal conditions, to improve the education of children with disabilities. Each project must concentrate on a specific application of technology, or combination of applications, that special educators and researchers believe can expand the learning accomplishments of children with disabilities. The targeted skills must be clearly defined and the evaluation must document: (1) The relative impact on educational improvement resulting from use of the technology, and (2) the methods and materials required for successful implementation of the innovative approach. Study sites must be schools or school districts where administrators and teachers have committed themselves to improving education through exploration of innovative approaches, and to a planned effort that incorporates staff development, material resources, monitoring, and evaluation. Projects must determine the benefits of technology use, as well as the observed limitations or areas where technological approaches show marginal utility.

Project Design

The grantees must design a full-scale implementation, or expand an existing implementation, of particular instructional applications of innovative technology, incorporating material and human resources that are expected to demonstrably enhance the learning of children with disabilities. Planning and management of the innovation must involve participation by both administrators and teachers. Staff must receive appropriate training and technical support. Materials and equipment must not only be sufficiently available and accessible but, to the degree possible, they must be state-of-the-art so that the impact of the technological innovation can be heightened. Over the course of each project, some of these resources must be varied (or timed)—across groups of participants—to provide comparison measures for various implementation features.

The particular procedures, features, resources, and practices that contribute to effective implementation of specific applications of technology and media must be determined. Projects must address some or all of the following questions:

- What are the skills, competencies, knowledge, behaviors, or concepts that are addressed and affected through this application of technology?
- What is the learning benefit for children with disabilities that is associated with the innovative approach?
- What other benefits can be attributed to use of the innovative approach, e.g., in student motivation, enrichment, self-concept, socialization, integrated placement?
- What is the impact on teachers and classroom management (i.e., do technologies enhance the individualized tailoring of instruction for students with disabilities in integrated settings)?
- Under what implementation conditions (amount of staff preparation, adequacy of resources, etc.) can different positive outcomes for children be anticipated?
- With what types or levels of disability, age, grade, and particular instructional needs, is a particular application most appropriately used?
- What are the particular features of material resources (hardware, software, peripherals, supplies, etc.) that enhance/inhibit the success of the approach?

Methods

The project must conduct qualitative or quantitative evaluations, or both, to establish the benefits, as well as identify the limitations of the technological innovations. The evaluations must be used to refine approaches and document benefits and limitations.

Each project must conduct three distinct stages of operation:

(1) Planning of the implementation, including collaboration among staff; design of evaluation activities; acquisition of necessary equipment; initial training; baseline measures (pre-implementation).

(2) Full-scale implementation (may be in stages); technical assistance; monitoring, documentation, and initial analyses; formative evaluation and refinement of approaches.

(3) Continued implementation; final evaluations and refinements; documentation of visibly compelling demonstrations of the utility and effectiveness of technological innovations in instruction; dissemination of video, materials, implementation guidelines, and reports.

An additional six-month option, to be funded at the Department's discretion, must be included in the proposed project. This option period, if funded, would be used to provide for collaboration, and dissemination activities, including a meeting of the grantees in Washington, DC.

Collaboration

Applicants may form teams, e.g., of researchers and practitioners, to address the requirement that the project be conducted in the context of ongoing instructional programs in school district settings. "Challenge grants" including matching or in-kind contribution of state-of-the-art equipment or materials from, for example, vendor groups or associations are encouraged.

Four grants are planned, each targeting one or more specific applications of innovative technology for instruction of children with disabilities. Projects must cooperate in sharing conceptual frameworks and developing similar understandings of

outcomes. In order to facilitate such cooperation, projects must budget for one group meeting each year. In addition, projects must budget to attend the annual two-day research project directors meeting held in Washington, DC each year. These meetings will allow the projects to develop coherent conceptions of optimal implementations of instructional technology, to be communicated to practitioners, researchers, and decision makers.

Products and Dissemination

These projects must provide in-depth documentation of effective innovative uses of technology for educating children with disabilities. By focusing on particular technology uses, and by providing the human and material resources that would optimize effects, the projects are intended to provide compelling and convincing evidence of the educational value of technology. Documentation must clearly define and scrutinize the benefits of particular approaches and conditions, as well as their limitations. To ensure that the information obtained in this project is shared with practitioners, dissemination plans and products must target administrators and teachers. To make the information directly useful and usable, dissemination materials must present concrete examples, specific procedures, and instructions for adaptation to other settings. To heighten the visibility of specific applications of technology, video-recording must provide additional documentation and supplement the other cogent, concise, and highly usable materials for dissemination. Copies of all dissemination products must be provided to the two centers on technology sponsored by the Office of Special Education Programs (Center to Advance the Use of Technology, Media, and Materials in Specially Designed Instruction for Children with Disabilities and the Center to Advance the Quality of Technology, Media, and Materials for Providing Special Education and Related Services to Children with Disabilities).

(Catalog of Federal Domestic Assistance Number: 84.180, Technology, Educational Media and Materials for Individuals with Disabilities Program)

Program Authority: 20 U.S.C. 1461.

Dated: April 10, 1992.

Lamar Alexander,

Secretary of Education.

[FR Doc. 92-11160 Filed 5-12-92; 8:45 am]

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DEPARTMENT OF EDUCATION

[CFDA No.: 84.180]

Technology, Educational Media and Materials for Individuals With Disabilities Program for Fiscal Year 1992; Inviting Applications for New Awards

Purpose of Program: To support projects and centers for advancing the availability, quality, use, and effectiveness of technology, educational media, and materials in the education of children and youth with disabilities and the provision of early intervention services to infants and toddlers with disabilities.

Eligible Applicants: The eligible applicants are institutions of higher education, State and local educational agencies, public agencies, and private nonprofit or for-profit organizations.

Note: The Department of Education is not bound by any estimates in this notice, except as otherwise provided by statute.

Applicable Regulations: (a) The Education Department General Administrative Regulations (EDGAR) in 34 CFR parts 74, 75, 77, 79, 80, 81, 82, 85, and 86; and (b) the regulations for this program in 34 CFR part 333.

Applications Available: May 20, 1992.

Priorities: The priority in the notice of final priorities for this program, as published elsewhere in this issue of the **Federal Register**, applies to this competition.

This program supports AMERICA 2000, the President's strategy for moving the nation toward the National Education Goals, by improving our understanding of how to enable children and youth with serious emotional disturbance to reach the high levels of academic achievement called for by the National Educational Goals and by encouraging the creation of communities where learning can happen.

TECHNOLOGY, EDUCATIONAL MEDIA, AND MATERIALS FOR INDIVIDUALS WITH DISABILITIES PROGRAM

[Application Notices for Fiscal Year 1992]

Title & CFDA No.	Deadline for transmittal of applications	Deadline for intergovernmental review	Available funds	Estimated size of award(s)	Estimated number of awards	Project period in months
Innovative applications of technology to enhance experiences in the arts for children with disabilities (CFDA 84.180D).	June 11, 1992	August 11, 1992	$1,000,000	[1] $200,000 per year.	Up to 24.	
Studying how the design of software and computer-assisted media and materials can enhance the instruction of preschool children with disabilities (CFDA 84.180F).	June 11, 1992	August 11, 1992	$1,800,000	[2] $360,000 for 2 yrs.	5	Up to 24
Demonstrating and evaluating the benefits of educational innovations using technology (CFDA 84.180E).	June 11, 1992	August 11, 1992	$3,597,000	[3] $449,625 for 2 yrs.	8	Up to 36

[1] Amount listed is the estimated funding level for the first 12 months of the project. In the second year, projects are likely to be level funded unless there are increases in costs attributable to significant changes in activity level.

[2] Amount listed is the estimated funding level for the entire 24 months of the projects.

[3] Amount listed is the estimated funding level for the first 24 months of the projects. In the third year, projects are likely to be level funded unless there are increases in costs attributable to significant changes in activity level.

For Applications or Information Contact: Linda Glidewell, Division of Innovation and Development, Office of Special Education Programs, U.S. Department of Education, 400 Maryland Avenue, SW. (Switzer Building, room 3524), Washington, DC 20202. Telephone: Linda Glidewell (202) 732–1099. Deaf and hearing impaired individuals may call (202) 732–6153.

Program Authority: 20 U.S.C. 1461.

Dated: May 7, 1992.

Robert R. Davila,

Assistant Secretary, Office of Special Education and Rehabilitative Services.

[FR Doc. 92–11161 Filed 5–12–92; 8:45 am]

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federal register

Wednesday
May 13, 1992

Part VII

Department of the Interior

Bureau of Indian Affairs

Draft Environmental Impact Statement (DEIS) for the Campo Solid Waste Management Project on the Campo Indian Reservation, San Diego County, CA; Notice

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

Draft Environmental Impact Statement (DEIS) for the Campo Solid Waste Management Project on the Campo Indian Reservation, San Diego County, CA

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Extension of comment period for the DEIS.

SUMMARY: This notice advises the public that the comment period for the Draft Environmental Impact Statement (DEIS) for a proposed lease of a portion of the Campo Indian Reservation for development of a solid waste management project has been extended. The comment period for the DEIS will now end on June 8, 1992, instead of the original deadline date of May 8, 1992. This notice is furnished as required by the National Environmental Policy Act (NEPA) Regulations (40 CFR part 1503) to obtain comments on the DEIS from agencies and the public.

DATES: Written comments should be received on or before June 8, 1992, and should be directed to Mr. Ronald M. Jaeger, Area Director, Sacramento Area Office, Bureau of Indian Affairs, 2800 Cottage Way, Sacramento, California 95825.

There will be no additional Public hearings.

FOR FURTHER INFORMATION CONTACT: Mr. Donald B. Knapp, Environmental Quality Specialist, Sacramento Area Office, Bureau of Indian Affairs, 2800 Cottage Way, Sacramento, California 95825. Telephone (916) 978–4703.

SUPPLEMENTARY INFORMATION: This notice is published pursuant to § 1503.1 of the Council of Environmental Quality Regulations (40 CFR, parts 1500 through 1508) implementing the procedural requirements of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*), Department of the Interior Manual (516 DM 1–6) and is in the exercise of authority delegated to the Assistant Secretary—Indian Affairs by 209 DM 8.

Patrick A. Hayes,

Director, Office of Trust and Economic Development.

[FR Doc. 92–11243 Filed 5–12–92; 8:45 am]

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