

# ECOSYSTEM MANAGEMENT

## Implementation Techniques and Strategies for Conservation Plans

**L**ocal governments are under increasing pressure to implement open space and conservation plans to preserve threatened and endangered species and wildlife habitats. Those plans must address local objectives as well as state and federal mandates. Even before these mandates were imposed, many open space and conservation plans failed to meet their stated goals and objectives. Others simply never were adopted, even after years of effort.

### **Madelyn Glickfeld**

**Madelyn Glickfeld** is the Academic Director of the Streisand Center for Conservancy Studies in Malibu. She is also a member of the California Coastal Commission and a co-coordinator of the Annual Land Use Law and Planning Conference at University of California, Los Angeles, Extension.

### **Sonia Jacques**

**Sonia Jacques** is an Associate with the consulting firm Economic & Planning Systems, Berkeley. She has completed several open space and agricultural preservation studies and is currently working on implementation methods for proposed habitat management plans in California.

### **Walter Kieser**

**Walter Kieser** is a land use planner and urban economist with 20 years experience in land use planning, government organization, and economic and financial analysis. He is a founding Principal of Economic & Planning Systems, Berkeley.

### **Todd Olson**

**Todd Olson** received his J.D. from the University of California. He practices real estate law and is President of Olson Policy Consulting, Inc., which specializes in developing market-oriented alternatives to traditional governmental regulation.

One of the key reasons for these failures is insufficient emphasis on effective implementation measures. Too often, implementation has been treated as an afterthought and appended to a plan after the design is complete and policy and land use commitments are made. There are many explanations for this approach, including incomplete program design and execution, inadequate funding committed to planning, limited awareness of innovative implementation techniques, and lack of political will on the part of decision makers.

During the past decade, the difficult task of implementing open space and conservation plans has become even more challenging due to a combination of factors including: increasing market demands to convert open land to urban uses; reduced funding from state and federal sources; decreasing local government fiscal and financial capabilities; competition for funding with other important public investment priorities; and rulings in a series of United States Supreme Court cases that have constrained the exercise of the police power. These challenging conditions have inspired a wide array of innovative open space preservation and conservation implementation techniques characterized by higher levels of cooperation between competing interests; new land use regulation techniques; new public acquisition and funding strategies; and, of particular interest, use of "compensatory regulation" techniques.

Compensatory regulation techniques are the focus of this article. These techniques increase the effectiveness of land use regulations and limited public funding by facilitating development that is compatible with conservation objectives, and then capturing a portion of the development value to secure open space. Compensatory regulation techniques stand on a continuum between standard land use regulation and open space land acquisition and financing techniques. Used individually, or in combination with standard techniques, they can offer local governments and owners an equitable way to carry out state and federal mandates, augment limited public land acquisition dollars, provide compensation for affected landowners, and balance economic interests with planning and conservation objectives.

This article provides guidance on how to build compensatory regulation-based implementation strategies for large-scale open space and conservation plans within the context of the trends described above. It describes and compares implementation techniques, with the intention of assisting practitioners to select the tools best suited to their particular open space preservation and conservation planning efforts. The article then illustrates how individual techniques can be combined into implementation strategies.

#### RECENT TRENDS IN OPEN SPACE AND CONSERVATION PLANNING

Open space and conservation planning efforts are continuously being shaped by social, economic, legal, and institutional changes. These changes define the focus, form, and content of local open space and conservation plans. Four key trends directly affect implementation efforts.

First, open space and conservation plans prepared in the 1970s and early 1980s focused more on the "passive" aspects of open space, which defined urban form and provided a visual backdrop, and the "active" aspects of open space that provided recreation or produced managed resources (such as agricultural). Although these objectives remain important, there has been an increasing awareness of the natural biological ecosystem functions of open space and the need to conserve continuous, connected, sustainable habitat areas for native species of plants and animals.

Second, open space and conservation planning has become more regional in scope as local governments recognize that resource protection objectives cannot be achieved through unilateral actions. These multijurisdictional open space and conservation planning efforts, often made in concert with state created conservancies, tend to require sophisticated implementation strategies because they involve more interaction between open space and conservation objectives, more jurisdictions, and more affected landowners.

Third, during the last decade, a significant new impetus for land conservation has been provided as legislation including the federal Endangered Species Act (FESA) (16 USC §§1531-1544), the California Endangered Species Act

(CESA) (Fish & G C §§2050-7098), the federal Clean Water Act (33 USC §§1251-1387) (related to wetlands protection), and various other state conservation initiatives have increasingly constrained the use of private lands. Increasingly rigorous application of these laws has placed requirements on local governments that must be reconciled and implemented, generally without sufficient financial support from higher levels of government.

Fourth, the nonprofit sector has played an increasing role in conservation programs and in protecting open space. The growth in the nonprofit land trust movement and the success of national conservation organizations like the Trust for Public Land and The Nature Conservancy indicate the important role played by public-private partnerships in conservation efforts. There are now nearly 1100 local and regional conservation groups known collectively as land trusts that have helped protect more than 4 million acres nationwide. These private nonprofit land trusts perform an invaluable role in leveraging limited public acquisition dollars. Land trusts act as third-party brokers between private landowners and public conservation agencies; raise funds for local conservation projects; educate the public about the importance of land conservation; implement purchase of development rights programs; encourage appropriate stewardship of natural resources; and pioneer innovative conservation techniques and strategies. For further discussion of land trusts, see Haberkorn, *The Role of Public Conservancies, Joint Powers Authorities, and Nonprofit Land Trusts* on p 6.

#### CONSERVATION IMPLEMENTATION TECHNIQUES

Open space and conservation plans typically encompass protection and management of privately owned lands designated for recreation, natural resources preservation, and/or managed resources production. Most often, they have been implemented by individual local government jurisdictions through a combination of land use regulations (the police power) and local, state, and federal acquisition programs. Land use regulation, including general plan land use designations and policies, zoning, and subdivision regulations, are generally simple to administer

and do not place a significant cost burden on local government (the cost of conservation falls on the affected landowners). On the other hand direct acquisition is also simple and compensates affected landowners (the cost of conservation falls on the government). Land use regulations, in addition to creating equity problems in some instances, are subject to continuous political intervention and therefore lack permanence. Public acquisition of full-fee interests is limited by lack of funding and competition with other public investment priorities.

Because of the limitations of these traditional implementation techniques, a large number of innovative techniques or "compensatory regulation techniques" have been developed by local governments throughout the country. In general, these techniques fall somewhere between standard land use regulation and outright public acquisition programs.

The techniques evaluated in this article include:

- development permit exactions;
- specific plan exactions;
- in-lieu fees;
- transferable development credits;
- land readjustment (joint venture partnerships);
- tradable habitat credits;
- land donations and exchanges;
- mitigation banking; and
- purchase of development rights.

These techniques, when used individually or in combination, hold out the hope of providing regulatory relief, augmenting public land acquisition revenues, compensating affected landowners, and establishing a permanent, conservation-oriented land use policy.

These compensatory regulation techniques have been employed with varying degrees of success. For example, although transfer of development credits (TDC) programs have long been the subject of academic analysis, and many programs have been proposed and initiated only a few successful programs are operating in the United States. It is often the case that these innovative conservation techniques are most successful when they are combined in hybrid strategies employing variations on, and combinations of, already-tried techniques.

To evaluate these techniques in the proper context, practitioners should consider the following factors:

***The need for such techniques often arises from the sophisticated and complex implementation problems related to large-scale, multiagency, multiple-landowner open space and conservation plans.*** When a single landowner owns most of the planning area, a negotiated arrangement in exchange for land use entitlements is often the answer. If the area to be conserved is relatively small, unique, and requires public access or active management, direct public acquisition of the land is often the best approach. When simple solutions can be effective, they should be used.

***Compensatory regulation programs typically lack one key advantage of direct regulation and direct acquisition: simplicity.*** Because of the hope held out by using these strategies for resolving difficult conservation problems, many communities have decided that it is worth the effort to explore, and often to implement, these more complex approaches to open space and conservation plan implementation.

***A key feature of most of the techniques described and evaluated below is the leveraging of public investment.*** Typically, the techniques involve some means of compensating landowners for the dedication or other protection of private lands so that less public funding is needed for acquisition. Each technique, however, will require some amount of public funding, if for no other purpose than to initiate the planning process.

***The techniques described fundamentally involve strategies to restrict development on habitat or other open space lands; as such they do not address financing of an ongoing management effort that may be required.*** To be complete, an open space or conservation plan should include programs for managing land. Program administration and recurring land management costs may also require ongoing public funding. Although some techniques provide means for covering or reimbursing such costs, the management component of conservation plans is generally beyond the scope of this article.

***There is often a lack of trust between landowners, developers, conservationists, and government agencies with regulatory responsibilities and mandates.***

This lack of trust is founded on strong philosophical differences, lack of sensitivity, and inconsistency or lack of commitment, particularly on the part of government agencies. Establishing greater trust between interest groups and government agencies is critical to this process.

***Compensatory regulation techniques, while offering hope of resolving complex implementation problems, do not fully replace either local government land use regulation as it is traditionally practiced, or effective, well-funded public acquisition programs.*** This is true even when the regulatory objective is federally mandated, as in the case of endangered species protection. Any compensatory regulation or public acquisition program, including general plan policy and zoning regulations, will become more costly and harder to implement without a sound and consistent underlying local government land use regulatory framework. Generally, compensatory regulation techniques offer mechanisms to augment or "leverage" standard land use regulations, and mitigate some of the factors that make standard regulation inequitable or infeasible.

## **Legal Authority for Conservation Techniques**

The legal authority for local jurisdictions to protect open space derives from the general police power delegated from the state to cities and counties by Cal Const art XI, §7. The state also has delegated specific open space planning authority to local jurisdictions. For example, local jurisdictions may prepare specific plans that designate open space and provide standards for the conservation of natural resources. Govt C §§65450,65451. They may negotiate development agreements with private landowners that require the dedication of lands for public purposes in exchange for providing vested entitlements to develop. Govt C §§65864, 65869.5. They may also receive, through purchase or exaction, dedications of permanent open space easements. Govt C §§51070-51097.

If federally listed threatened or endangered species are located within a local jurisdiction's boundaries, the jurisdiction may augment its police powers by gaining the authority to permit individual projects within its jurisdiction to "take"

listed species. "Take" is defined in FESA §9 as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect." 16 USC §1358. There is presently a split in the federal circuits as to whether modification of the habitat of a species can constitute take. Compare *Palila v Hawaii Dep't of Land & Natural Resources* (D Haw. 1979) 471 F Supp 985, aff'd (9th Cir 1981) 639 F2d 495, and *Palila v Hawaii Dep't of Land & Natural Resources* (D Haw. 1986) 649 F Supp 1070, aff'd (9th Cir 1988) 852 F2d 1106 (habitat modification constituted "take"), with *Sweet Home Chapter Communities for a Greater Ore. v Babbitt* (DC Cir (1994) 17 F3d 1463 (habitat modification not within definition of "take"). The jurisdiction obtains this authority by applying for an incidental take permit under FESA §10(a) (16 USC §1539(a)). Issuance of a §10(a) permit requires that the permit applicant submit a habitat conservation plan that meets specified criteria. If a §10(a) permit is issued to the jurisdiction and the conservation plan contemplates incidental take of listed species by private projects, then the local jurisdiction may make the benefits of the permit available to projects that comply with the conservation plan. Fish and Game Code §2081 has been invoked to provide similar take authority under CESA, though not without controversy. The obtaining of take authority under both FESA §10(a) and Fish & GC §2081 may be coordinated for multiple species and habitats under the California Natural Community Conservation Planning Act of 1991 (Fish & G C §§2800-2840).

All of the above sources of authority for open space protection by local jurisdictions are subject to the fifth amendment of the United States Constitution, which prohibits the taking of private property without just compensation and is applied to the states through the fourteenth amendment. The United States Supreme Court has decided several cases over the past several years that examine the applicability of the fifth amendment "takings" prohibition to the exercise of government's police power in regulating land use. A detailed examination of these cases is beyond the scope of this article.

When selecting an implementation technique for protecting open space, however, practitioners must consider whether a technique is likely to conflict

with these fifth amendment rulings. This consideration is a crucial step in helping to avoid costly litigation, which could cripple a program even if the challengers do not succeed. In addition, considering takings implications from the outset may make the program more politically viable.

The following are some practical tests to apply in order to avoid a takings challenge (failing any of these tests does not necessarily mean the fifth amendment has been violated, but rather that the program could be vulnerable to challenge and should be examined carefully by legal counsel):

- o **Economic use:** The program should avoid depriving any particular landowner of all, or substantially all, economic use of his or her land, either temporarily or permanently. See *Lucas v South Carolina Coastal Council* (1992) 505 US \_\_\_ 120 L Ed 2d 798, 112 S Ct 2886; *First English Evangelical Lutheran Church v County of Los Angeles* (1987) 482 US 304, 96 L Ed 2d 250, 107 S Ct 2378; *Agins v City of Tiburon* (1980) 447 US 255, 65 L Ed 2d 106, 100 S Ct 2138.
- o **Value suppression for public acquisition:** The program should avoid downzoning or placing other value-suppressing restrictions on private property that the program is targeting for public acquisition, particularly if it appears that the purpose of the downzoning or other restriction is to reduce the cost of public acquisition. See *Kissinger v Los Angeles* (1958) 161 CA2d 454, 327 P2d 10.
- o **Essential nexus:** The program should establish a connection (an "essential nexus" in the words of the Court) between any exaction of land or fees from a project and the impacts that government seeks to prevent, minimize or mitigate. Conversely, the program should avoid assessing exactions to projects without establishing such a nexus. See *Nollan v California Coastal Comm'n* (1987) 483 US 825, 97 L Ed 2d 677, 107 S Ct 3141.
- o **Rough proportionality:** In addition to establishing an essential nexus, the program should attempt to roughly measure, preferably in quantitative terms, the impacts of projects and make any exactions "roughly propor-

ional" to the project impacts. This requirement could prove to be difficult to meet in many cases, but note that the Court has directly applied the rough proportionality test only to land dedication exactions that are imposed on a project-specific basis. It is not clear that a regionally imposed fee, for example, must meet this test. See *Dolan v City of Tigard* (1994) 512 US \_\_\_ 129 L Ed 2d 304, 114 S Ct 2309.

Implementation techniques are described in more detail below, and any special regulatory authority for them is noted, along with potential problem areas under the fifth amendment.

### Description of Techniques

This section briefly describes each of the major types of compensatory regulatory techniques. Under each technique operating examples are listed; the legal basis for the technique is cited where appropriate; the applicability of the technique in an interjurisdictional context is discussed, as is the voluntary or mandatory nature of the technique; and relevant institutional issues are briefly described.

#### Development Permit (Land Dedication)

As part of the development permit process, landowners are required to dedicate environmentally sensitive lands as a condition of receiving entitlements. Most local jurisdictions use this technique often. The most common example of such dedication requirements is California's Quimby Act (Pub Res C §§5096.141-5096.213), which permits local agencies to require dedication of park lands as a condition of development approval. Dedication requirements are mandatory because development entitlements are conditioned on satisfying the mitigation needs.

Dedication requirements are classic exercises of the police power. They are expressly authorized by the specific Plan Law (see Govt C §§65450, 65451) and the Subdivision Map Act (see Govt C §66474(e)). As noted above, however, the *Dolan* case may have limited a jurisdiction's ability to exact dedications by requiring the government to show that there is not only an essential nexus between the requirement and a project impact, but also that there is rough proportionality.

There are at least two limitations on the usefulness of this technique. First, as a practical matter, it cannot be used in an interjurisdictional setting, because a developer is generally required to secure separate development permits from each applicable jurisdiction. Second, using the development permit application as a conservation tool is reactive. The government cannot take the initiative in requiring a dedication on valuable open space, but must react to a property owner's development proposal. The timing of the development permit request and the dedication will be determined by real estate cycles; therefore, timing is entirely dependent on the private sector.

### **Multiple-Owner Specific Plan (Open Space Land Dedication Financed by Open Space Assessments or Impact Fees)**

Through a specific plan or area plan process, protection costs are spread over all landowners in the plan area, and are financed by land-secured debt or benefit area fees, giving smaller landowners the benefit of a large-scale specific plan. Examples of open space and habitat dedications within the context of a specific plan include Mountain House Master Plan in San Joaquin County, the Evergreen Specific Plan area in San Jose, and the Southwest Area Plan in the City of Santa Rosa.

Establishing open space areas and providing conservation standards is specifically authorized by Govt C §§65450 and 65451. To the extent that such actions are tantamount to exactions of land however, the *Dolan* rough proportionality test may come into play. One possible way to avoid a *Dolan* problem altogether is to negotiate the specific plan in the context of a development agreement.

It is quite difficult to implement a specific plan in a multi-jurisdictional context as there is no guidance provided in the law for implementing specific plans across jurisdictional boundaries and local governments are often reluctant to cede regulatory authority. Regional land conservancies may offer assistance in this matter. The adoption of a specific plan requires a high level of cooperation between landowners in the plan area and the public agency. As a conservation tool, a specific plan works best when the developability of land inside the plan area is relatively homogenous. Otherwise, it may be difficult to equitably apportion

development value among the various landowners involved. A specific plan allows flexibility as a landowner can donate land and/or pay a fee that will then be used to acquire land for conservation purposes. A specific plan can be initiated by either the government or the private sector.

### **In-Lieu or Impact Fees (Developer and Mitigation Fees)**

Planning or zoning requires landowners in the specified impact or benefit area to pay a fee for every acre or unit developed. Funds raised are earmarked to purchase fee interests or conservation easements. Examples of in-lieu fee programs designed to protect open space and habitat areas are the Riverside County Short-Term Habitat Conservation Plan (HCP), the Metro-Bakersfield HCP, and the Coachella Valley HCP.

In-lieu programs are exercises of the police power and are subject to the *Nollan* essential nexus test. If a fee is charged on all new development for the purpose of purchasing habitat, it is not clear whether a sufficient nexus can be established for projects whose natural habitat has long since been destroyed. Also, cases challenging fees on the basis of the *Dolan* rough proportionality test are being reviewed by the courts, possibly presenting an additional fifth amendment hurdle for in-lieu fee programs.

In-lieu fees are usually mandatory for developers seeking entitlements within the area subject to the fee. Interjurisdictional fee programs may be implemented via institutional arrangements such as a joint powers authority. See Haberkorn, *The Role of Public Conservancies, Joint Powers Authorities, and Nonprofit Land Trusts*, p 33. Fees collected may vary over time depending on the level of development. The timing and amount of fee receipts may not coincide with the value or need for open space land acquisition. As a conservation tool, developer fees have the disadvantage that they tend to work against economic cycles; funds are most available when demand for developable sites is strong, so conservation land prices are also high. In-lieu fee programs designed to preserve open space or habitat require an acquisition entity to buy and manage land and conservation easements.

### **Transferable Development Credits (Negotiated)**

In a TDC program, individual landowners can voluntarily enter into negotiations whereby the owner (sender) of open space, agricultural, or habitat land sells or transfers "development credits" to a landowner-developer (receiver) wishing to increase the density on a developable parcel. Local governments can encourage such transfers by acting as facilitator and by allowing an increase in density over the base zoning on the receiver parcel in return for a dedication of a perpetual conservation easement on the sender parcel. This type of program is voluntary and requires developers-landowners to identify and negotiate with willing sellers of TDCs on a case by case basis. A negotiated TDC program does not require a special TDC ordinance, but does require consistent enforcement of local zoning regulations and a commitment to a strong regulatory environment.

Typical examples of negotiated TDCs include several projects in Marin County, through which easements were purchased on dairy farms in return for increased density in suitable areas.

TDCs are implemented through the police power, as expressed through the local general plan and zoning ordinances. Development agreements could be used to secure negotiated transfers for a period of time. Negotiated TDCs are presumably not subject to *Nollan* and *Dolan* because the exchange of TDCs for land is voluntary, not exacted.

It is very difficult to use negotiated TDCs in interjurisdictional settings. The success of negotiated TDCs depends on the local government's willingness to increase density on the receiver site and to work out a negotiated deal with the sender and receiver outside the framework of a formal TDC ordinance.

### **Transferable Development Credits (By Ordinance)**

Instead of having landowners negotiate TDC deals on a project-by-project basis, local governments can formally adopt a TDC ordinance to encourage protection of open space, agricultural land habitat lands, or community separators, while guiding future development into areas most capable of supporting increased density. A TDC ordinance designates by zoning "sender areas" where de-

velopment is restricted and “receiver areas” where density may be increased. Landowners wishing to develop above the base zoning in the designated receiver areas must acquire TDCs from landowners in the sender areas. When TDCs are sold, the sending parcel must dedicate a perpetual conservation easement over the land which prohibits future subdivision or changes in use. In some circumstances, TDCs may be severed from the land and traded on the open market. In theory, severable TDCs may be mortgaged and leveraged to acquire large tracts of land in sender areas.

Examples of functioning TDC programs include: Montgomery County in Maryland Pinelands in New Jersey; Cambria Pines in San Luis Obispo, California the Santa Monica Mountains in Malibu, California, and the Lake Tahoe Basin in California and Nevada.

TDC ordinance programs are implemented through the police power, just as negotiated ones are. In fact, several courts have cited TDC-type programs as helping to insulate regulatory schemes that might otherwise be suspect under the takings clause. See, e.g., **Penn Central Transp. Co. v New York City** (1978) 438 US 104, 137, 57 L Ed 2d 631, 656, 98 S Ct 2646; **American Sav. & Loan Ass'n v County of Marin** (9th Cir 1981) 653 F2d 364, 371; **Aptos Seascape Corp. v County of Santa Cruz** (1982) 138 CA3d 484, 496, 188 CR 191.

If sender areas are mandatory, however, ordinance-based TDCs could result in fifth amendment takings. If the only means by which a landowner in a sender area can obtain value for his or her land is by selling credits, but there is no market for credits, sender-area landowners could have valid inverse condemnation claims. To avoid this problem, the local jurisdiction may have to be prepared to buy credits to “make the market.” Doing so could prove to be complex and costly. If the sender areas are voluntary, takings violations are less clear cut and will depend on the nature of the development restrictions on the sender areas.

TDC ordinance programs encourage in-fill and development within existing urban areas, and reduce infrastructure costs by encouraging growth management. TDC transactions are difficult to implement across jurisdictional bound-

aries unless implemented by state and regional land use authority.

These programs work best if a private nonprofit land trust or quasi-governmental conservancy acts as an intermediary and creates a land bank of TDCs. The willingness of the local government and policy makers to increase density and streamline discretionary permitting in the receiver areas is critical to the success of TDC programs.

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In addition, the underlying economics of the TDC market must create sufficient incentives for senders and receivers to negotiate. The attractiveness of TDCs will be directly affected by the availability of viable alternatives—the more alternative land available for the desired level of development without the purchase of TDCs, the less willing senders and receivers will be to deal. The economics of the TDC market will also depend on the demand for development in the area, the timing of the TDC program vis-a-vis real estate cycles, and whether there are sufficient buyers and sellers to create a stable market.

#### **Land Readjustment Through Joint Venture Partnerships**

Under a land readjustment program, multiple landowners transfer their properties into a single entity (a corporation

or joint venture partnership) in exchange for a proportionate interest in the entity. The value of a proportionate interest is determined by the landowners themselves within the bylaws of the entity. Proportionate value is usually determined by the market value of each original parcel before combination. The entity then plans for the multiple properties as if they were within a single ownership. The entity allocates infrastructure, development, and open space and habitat areas according to market demand, local regulations, and open space requirements, rather than as if they were constrained by preexisting property boundaries. After the entity has secured entitlements for development and development is complete, property owners have a choice of receiving back a share of the developed property proportionate to the value of their shares in the overall property or selling their shares on the private market or to the entity itself.

Land readjustment is known by several different names throughout the world. It is commonly practiced in Japan and Korea and is used for the purposes of consolidating nondevelopable small urban parcels and providing modern infrastructure. In the United States, it has also been called “land assembly” and has been used, in suburbs of Washington D.C. and Atlanta, by single family neighborhoods in transition to commercial uses, to provide a highest and best use transition with maximum return to the property owners. Closer to home it has been used in Ormond Beach, Oxnard, as a method of consolidating intertidal beachfront lots to exchange with the city redevelopment agency for a commercial-ly developable parcel.

Attempts to introduce legislation to encourage land readjustment in California have so far been unsuccessful due mainly to fears concerning the potential use of eminent domain on key holdout owners. Most land readjustment systems around the world require that the significant majority of property owners (usually two-thirds) voluntarily join together prior to beginning the new planning and subdivision processes.

Unlike other methods of regulatory compensation dealing with multiple land ownerships, this process is privately initiated. It has relatively fewer interjurisdic-

tional complexities than other approaches. Land within multiple jurisdictions can be planned in cooperation with those jurisdictions by a single holding entity, instead of by multiple small ownerships submitting separate development proposals and sometimes conflicting infrastructure plans.

Fifth amendment scrutiny will be applied to the larger holding entity rather than to individual smaller landowners, making it much easier to attain reasonable economic value for the individual owners to share than if fragmented parcels were separately developed. This fact alone makes land readjustment an alternative to takings litigation. The principles of *Nollan* and *Dolan* would still apply, however, requiring both an essential nexus and rough proportionality for exactions imposed on the project as a whole.

Land readjustment works best when land, although held in many ownerships, is physically homogeneous. Otherwise it will be difficult to apportion value among the contributing landowners. The advantages are that, once consolidated, development can be redistributed to areas within the aggregated parcel that are less environmentally sensitive, and that preserve significant open space providing connections to adjacent or regional open space systems. Provisions for open space management and restoration can be made a condition of approval of the overall development. In addition, land readjustment can facilitate the consolidation of extremely sensitive parcels and exchange them for developable land.

### *Tradable Conservation Credits*

Tradable conservation credit programs (1) require mitigation in the form of conservation credits from landowners who desire to develop, and (2) reward credits to landowners who voluntarily preserve their land (through fee dedications or conservation easements). Credits are then freely tradable at market prices to allow landowners who need credits for mitigation to purchase them from landowners who have preserved their land. Variations on the approach could award credits for actions in addition to land preservation, such as for habitat restoration or enhancement. One version of tradable conservation credits that has been described in some detail is known as the habitat transaction method (HTM).

The HTM attempts to apply biological rigor to the establishment of credit values and mitigation requirements, taking into account parcel-specific habitat values, connectivity with other habitat, and overall shape of habitat areas.

Two tradable conservation credit programs are well along in the planning stages: the Kern County Valley Floor HCP and the Pleasant Valley HCP in the Fresno area. A few other large-scale conservation planning projects under development are considering incorporating tradable conservation credits into their programs.

As with TDCs, tradable conservation credit programs can be implemented through the police power, as expressed through the local general plan and zoning ordinances. In other cases, such programs can be a voluntary means of obtaining take authorization under FESA or CESA. Voluntary programs are most likely to work when a prior federal or state endangered species listing creates a pervasive constraint on development in the plan area and the use of the credit system is an attractive means for landowners to address the constraint. Voluntary tradable credit programs should have no problems under the fifth amendment. Mandatory ones could be challenged as they apply to particular landowners, but a carefully designed program could minimize such potential. Programs that attempt to systematically match mitigation credit requirements with project impacts, such as those based on the HTM, would essentially do exactly what *Nollan* and *Dolan* require in terms of establishing an essential nexus and rough proportionality.

Tradable conservation credits provide landowners the choice to develop or conserve their land while systematically creating a reserve system as development occurs. The need for public acquisition funding is minimized. Tradable credit programs can be implemented on an interjurisdictional basis, but would require the participating jurisdictions to cooperate in adopting a common credit system. The credit programs under development address multiple species, both listed and unlisted. Other conservation and open space values could also be addressed by such programs, creating a streamlined mitigation program for development while achieving multiple conservation objectives. Credit programs

can fine-tune the incentives to achieve various conservation criteria, but doing so requires formulas for setting credit values and requirements that add complexity to the program. If there are particular parcels that absolutely must be preserved to achieve program goals, such parcels may need to be acquired directly if the credit program does not provide sufficient incentives for preservation of those parcels.

### *Land Donation or Exchange*

Under this approach, a large public (e.g., military) or private agency, that owns land with habitat or open space value for purposes other than resource protection, specifically designates such land for resource protection through legal commitment, or donates that land to a land conservation agency. Alternatively, land owned by a large public or private landowner, which is not suitable or needed for open space conservation, is made available for exchange for private lands needed for conservation.

The United States Bureau of Land Management (BLM) has agreed to dedicate about 180,000 acres of land for the multiple habitat conservation program in San Diego County under the auspices of the San Diego County Association of Governments. (For discussion of this program, see Worden, *The San Diego Experience*, on p 43.) Land that is good habitat will be included in the preserve program, and land that is not needed for habitat or habitat connections can be made available to exchange for needed private sector land. In another example, the United States Forest Service has set aside land with limited resource value and exchanged it with private landowners for property with resource and recreational value in the Angeles National Forest in southern California.

For public agencies, the authority to donate or set aside land for conservation purposes and the authority to trade lands for conservation purposes is in the enabling legislation of the particular agency. For instance, the BLM is authorized by federal law to set aside or trade lands for a variety of purposes. 43 USC §1715; 43 CFR 52200.

There are no legal constraints for private sector donations of land provided that the land donated meets the recipient agency's conservation criteria. California law specifically authorizes both govern-

mental entities and private conservancies to accept perpetual easements from private parties for open space preservation of conservation purposes as an alternative to fee dedication or transfer. Govt C §§5107&51097; CC §§815-816. However, public-private land exchanges can be complex and may have to meet the requirements of the National Environmental Policy Act (42 USC §§4321-4370d) and the California Environmental Quality Act (CEQA) (Pub Res C §§21000-21178.1). Both of these Acts require time and effort and can create legal impediments when a controversial land exchange is proposed.

Land exchanges and private donations are always voluntary and may be triggered either by the private landowner or by the public agency. However, when federal or state legislation mandates the protection of open space, as under FESA or CESA, the federal Department of the Interior and the state Resources Agency may contribute federal or state lands as a potential part of the state and federal "share" of costs in implementing open space protection plans. Land exchanges and donations may be hnerjurisdictional, but exchanges involving more than one jurisdiction are complex and require lengthy administrative procedures.

### **Mitigation Banking**

In this conservation technique, a public or private entity acquires and manages open space lands for preservation ahead of any need for development. The entity banks "mitigation credits" from setting aside and managing such lands for open space and habitat purposes for future use to mitigate large-scale projects with significant environmental impacts. Mitigation banks most commonly are established to provide advance mitigation for the proponent's own development projects. Some "entrepreneurial" mitigation banks have been established, however, and offer credits for sale to other landowners requiring similar mitigation.

Examples of mitigation banks include Southern California Metropolitan Water District purchase and reservation of open space lands for habitat preservation for a major storage reservoir; the Port of Los Angeles restoration of Batiquitos Lagoon to mitigate for phase I of its port expansion; the Coles Levee Ecosystem Project in Kern County; and the Beach Lake Mit-

igation Bank in southern Sacramento County.

Although there are no comprehensive federal or state laws regulating mitigation banking, the legal basis is derived from the policy statements and regulations of several federal and state agencies. In particular, the following regulations apply regarding wetlands mitigation banking: the Environmental Protection Agency (EPA) and the Army Corps of Engineers 1993 Guidance; the EPA Region 9, 1991 Guidelines; and the Sacramento-San Joaquin Valley Wetlands Mitigation Bank Act of 1993 (Fish & G C §§1775-1796), which authorizes the Department of Fish and Game to adopt regulations to qualify Central Valley sites as wetlands mitigation banks for use by permittees holding permits and applicants seeking permits under the Clean Water Act §404 (33 USC §1344).

Although providing mitigation for a development project with environmental impacts is mandatory, participation in a mitigation bank is voluntary. There is some uncertainty involved in mitigation banking in that sometimes regulatory agencies with approval authority are willing to identify the number of acres of habitat within a piece of land acquired for mitigation purposes, but are not willing to state how many units of mitigation a property is worth until the future project is brought before them

Mitigation banking has been successfully implemented in an interjurisdictional setting under the auspices of a joint powers authority that includes the affected local governments and a conservancy, or a state or federal agency with some land use regulatory power.

Mitigation banks are most controversial when they involve the restoration or creation of wetlands. Because mitigation banking is not mandated by *legislation* for agencies, many agencies have been reluctant to encourage and work with proponents. When mitigation banking has occurred, the public or private agency has had a major project at stake and has wanted assurance that the mitigation it does will be approved in a timely way so that the project is not delayed. (For further discussion of wetlands mitigation banking, see the series of articles, "No Net Loss": *The Challenge of Protecting*

*Wetlands*, 1 CEB Land Use & Env Forum 241 (Summer 1992).)

### **Purchase of Development Rights**

A government or private nonprofit land trust can establish a conservation program and acquire perpetual conservation easements (also known as the purchase of development rights, or PDR) that restrict or prohibit future development or subdivision. Land ownership remains in private hands.

Examples of PDR programs include those established by private land trusts and public land conservancies including The Nature Conservancy, the American Farmland Trust, the Tahoe Conservancy and the California Coastal Conservancy. Several states have PDR programs, mainly with the goal of agricultural land protection, including Connecticut, Delaware, Maryland, Massachusetts, New Jersey, Pennsylvania, and Vermont. County programs include Suffolk County in New York, and Marin and Sonoma Counties in California.

Under common law, real property may be divided into various interests through the use of easements, covenants running with the land or other conveyances of a portion of the fee estate. In California government agencies are specifically authorized to receive perpetual open space easements as a means of land preservation, providing ready statutory authority for the permanent purchase of development rights. See Govt C §§51070-51097.

PDR programs are generally voluntary, although in rare circumstances governments may use the right of eminent domain to acquire a key parcel. PDR programs work best when there is an underlying viable economic use of the land after the development rights have been severed such as agriculture or forestry. PDR programs also work well for protection of dispersed habitats, such as the habitat of Swainson's hawk, whereby multiple conservation goals can be achieved including the preservation of privately owned agricultural land and the protection of open space as a community separator. The incentive for landowners to participate is greatest when the local land use regulatory framework is strong and consistently enforced. The disadvantage of PDR programs is that it is impos-

sible to raise sufficient funds to acquire conservation easements on even a portion of all open space and habitat lands in the nation. PDR programs therefore are most effective when used in conjunction with other conservation strategies.

#### COMPENSATORY REGULATION TECHNIQUES EVALUATED

The compensatory regulatory techniques described above can be evaluated by several criteria depending on whether one uses a private or public perspective. Figures 1 and 2 evaluate the techniques on the basis of seven strengths and weaknesses. Some private sector strengths and weakness are:

- General acceptance (by private landowners and developers);
- Financial incentives and disincentives
- Transaction costs;
- Equity (Who bears the costs and burdens of conservation?);

Administrative simplicity;  
Tax consequences;  
State and federal regulatory streamlining (Does the technique result in receiving permits from the necessary agencies?).

Some public sector strengths and weaknesses are:

Administrative costs;  
Complexity;  
Public funding required (for acquisition);  
Quality of protection offered;  
Legal issues;  
Public acceptance;  
Success rate of programs (using this technique).

In the real world of conservation planning, these techniques often work best in conjunction with each other or combined with more traditional regulation and acquisition techniques. The following sec-

tion offers some thoughts on how these techniques can best be combined, and in which conservation situations they are most appropriately applied.

#### SELECTING HYBRID STRATEGIES

Practitioners attempting to devise effective implementation strategies for open space and conservation plans often face highly complex circumstances including multiple ownerships, overlapping conservation objectives, multiple local and regional jurisdictions, and regulatory intervention by state and federal agencies. Because of this complexity, it is unlikely that any single technique will suffice as an implementation strategy.

In general, a combination of techniques tailored to the circumstances will be necessary. This section addresses how the implementation techniques discussed above can be combined into effective implementation strategies.

**FIGURE 1**  
**Evaluation of Conservation Implementation Strategies – Private Sector**

PROGRAM	GENERAL ACCEPTANCE	FINANCIAL INCENTIVES/ DISINCENTIVES	TRANSACTION COSTS
DEVELOPMENT PERMIT (land dedication w/o compensation: and/or conformity to development standards & guidelines.)	Quite high	Entirely development and market driven. Larger ownerships may be able to bear burden more easily. Expensive for small landowners. Encourages private initiative.	Low for large landown/high for small landowner.
MULTIPLE-OWNER SPECIFIC PLAN (implemented by open space, dedications, assessments or impact fees.)	Quite high.	Can be initiated by local govt. or group of landowners. Encourages private initiative. Usually leads to clear & rational entitlements – often results in development agreements or vesting map.	Landowners benefit from economies of scale and share the planning costs.
IN-LIEU OR IMPACT FEES Also referred to as developer or mitigation fees.	Moderate.	Entirely development driven. Developers pay when they receive development approvals.	Low.
TRANSFERABLE DEVELOPMENT CREDITS – TDCs (negotiated)	Low to moderate.	Depending on economic conditions and the number of viable alternatives, landowners in the sender areas may have a low motivation to participate. Marketplace often discounts regulatory programs.	High unless there is a third party, such as a local land trust, willing to act as broker between the sender, the receiver and the local government.
TRANSFERABLE DEVELOPMENT CREDITS – TDCs (by ordinance)	Same as above.	Same as above, except that a TDC ordinance offers more predictability and certainty for developers in receiver areas and landowners in sender areas. If TDCs are severable it may help to expedite the development process.	Same as above.
LAND READJUSTMENT/ JOINT VENTURE PARTNERSHIP	In the U.S. this type of program is hard to initiate due to societal values about private property rights. Requires a high degree of landowner cooperation. Speculative land sales without infrastructure investment in areas with habitat value may make this an attractive option	It is costly and time consuming to assemble sufficient landowners to create a single entity. This cost may be reduced if major landowner or outside "land assembler" initiates and finances the process. Local regulation may also discourage assembly if fewer entitlements and more infrastructure are required on larger parcels. If local reg- ulation encourages assembly, economies of scale may reduce cost of entitlement.	Assembly costs can be quite high especially if several landowners are absentee. Works better if landowners' motivations investment rather than personal development plans. A landowners survey should be done to assess feasibility of assembling a minimum sized project.
TRADABLE CONSERVATION CREDITS	Moderate to high where introduced in planning stages; not yet tested in implementation.	Streamlined state and federal permitting process. Provides strong incentive to preserve most critical areas, and then gives choices to landowners to pay credits and develop or preserve land and receive tradable credits. Avoids parcel by parcel disputes.	Low to moderate. The more landowners in the plan area, the more efficient the market and the lower the transaction costs. Private brokers may facilitate transactions, but may not always be necessary. Since credits are interchangeable, they are less complex than real estate and could easily be traded between private parties.
LAND DONATION OR EXCHANGE	Land donations or reservations on state and federal land are generally well accepted and desired by the private sector unless there is a local jobs creating proposal on the table for the same land.	Private landowners can receive tax benefits by donating conservation land to a public or nonprofit entity. Conducting a land exchange secures development permits and may be quicker and more cost effective than seeking individual private landowners willing to sell mitigation land.	Generally low for donations. Costs can be high for public/private land exchanges.
MITIGATION BANKING	Generally high.	Requires significant capital to acquire, manage and restore a mitigation land bank. For small landowners seeking mitigation credits, purchase from a bank may be more cost effective than on-site mitigation or seeking an individual mitigation parcel.	Low for developers buying credits from a pre-approved mitigation bank. Costs can be high for the creator of a mitigation bank due to administrative and legal complexities. Economies of scale may reduce some costs.
PURCHASE OF DEVELOPMENT RIGHTS	High.	Incentives to sell easements are high for farmers who intend to stay in agricultural business. If regulatory framework is weak and development pressures are strong, landowners have little incentive to sell development rights.	Low to Moderate once key landowners are identified and credible appraisal methods are established.

# Strengths & Weaknesses

EQUITY	ADMINISTRATIVE SIMPLICITY	TAX CONSEQUENCES	STATE AND FEDERAL REGULATORY STREAMLINING
Individual landowner bears entire burden.	Easy to understand and administer. Does not require landowners to negotiate with each other. Works best with larger ownerships with both open space and developable land.	None unless land dedications are greater than required for entitlements. Additional land donations may be eligible for income tax deductions if donated for conservation purposes.	None. Regulatory review is, by definition, project by project.
Burden spread over all landowners in the plan area – as are other infrastructure costs. Individual landowners are not penalized for owning habitat lands.	Relatively easy to explain. Requires cooperative landowners. Reduces administrative costs to all landowners. Cooperative efforts may result in faster and less costly resolution of open space mitigation requirement than case by case negotiation.	Same as above.	Some. Federal and state regulatory review can be done over an entire specific plan area rather than parcel by parcel. Gives small landowners similar standing with regulators as large landowners.
Cost burden of purchasing open space is spread over all landowners in the designated impact area.	Open space fees are included in larger package of development fees for each developer. Pay-as-you-go system for payor.	May increase taxable value of land to be acquired.	Potentially very substantial. Streamlining can be significant for those permitted to pay a fee as complete compliance with federal or state regulations, such as the endangered species acts.
Equity may vary from transaction to transaction.	Requires a third party to act as a broker and facilitator. Negotiated TDCs are administratively complex.	Landowners in sender areas donating conservation easements to a government or nonprofit organization may receive income tax deductions and reduce capital gains and inheritance taxes. In some counties property taxes on sending parcels may be reduced after a conservation easement is recorded.	None. Since TDC negotiations are project by project, so will be any required compliance with state environmental laws.
Need balanced number of landowners in sender and receiver areas to create stable market. Timing and level of compensation depends on buyers and sellers reaching agreements on the price of a TDC.	Same as above except that the real estate community can be involved in implementation. Difficult to complete the first transaction since developers do not want to be first and landowners are reluctant to set a price precedent for a TDC.	Same as above.	Potentially very substantial. If the protection of the sender area is designed to comply with federal or state environmental laws, (unlikely with voluntary sender areas), development in the receiver areas could automatically comply with those regulations.
Benefits and burdens are spread among all landowners in the land readjustment association bear the full cost of open space protection unless outside conservation funds available.	Complex. Requires landowners to negotiate with one another, obtain or contribute financing and seek entitlements as a single entity.	Will vary by the individual circumstances of the participating landowners. Tax consequences will vary depending on the tax basis of the contributed property and the disposition of the property after the entity has secured entitlements.	If the land requires state or federal permitting under the Clean Water Act, FESA/ CESA or other legislation, Land Readjustment offers the possibility of streamlined regulation since only one permit needs to be issued rather than multiple permits for every single landowner.
Landowners with highest conservation value must pay credits to develop, but also have potential to receive the most credits they choose to preserve their land. The "pie" is cut based on conservation values, but landowners can choose either the "development piece" or the "conservation piece."	Requires much up-front planning work. Once framework is established landowners will have certainty, flexibility and predictability according to their location within the plan area.	Credits received in one year and sold in a later year may be taxed in the year received.	Potentially very substantial. Streamlining can be significant for those permitted to offer credits as complete compliance with federal or state regulations such as the endangered species acts.
Cost burden is spread over all taxpayers when a government dedicates public land for conservation purposes.	Land exchanges between private individuals and public agencies can be complex, especially where there is controversy regarding the public land to be exchanged.	Donations of private land for conservation purposes may be eligible for tax deductions (Sec. 170 (h) of the IRS code). Land exchanges are covered by Section 1031 of the IRS code. Exchanges or donations in return for development entitlements are not eligible for tax benefits.	Yes, if the parties making the donation or exchange are doing so to mitigate a project and meet FESA/CESA requirements. Donations and exchanges must however, meet certain regulatory requirements. Donated land must fit appropriate conservation criteria.
Places whole burden of mitigation on the public or private developer.	Administrative costs of pre-mitigating the effects of development are probably about the same as mitigating concurrently with the development permit.	No tax benefits if all the land in the mitigation bank is used later for securing development entitlements.	Potentially very substantial. Can streamline permitting once agencies are familiar with mitigation banking concept and bank is approved. Agencies require significant study and verification of open space/habitat value of land in mitigation bank.
Landowners receive compensation for open space values.	Terms of easement need to be negotiated and monitored after acquisition at a significant cost to easement holder.	Landowners may receive income tax deductions for gifts or bargain sales of conservation easements to a land trust or a governmental entity. In some counties property taxes may be reduced after a conservation easement is recorded.	If part of an overall program designed to provide compliance with state or federal environmental laws, development of lands not subject to PDR could automatically comply with those laws and regulations.

FIGURE 2

# Evaluation of Conservation Implementation Strategies – Public Sector

	ADMINISTRATIVE COSTS	COMPLEXITY	PUBLIC FUNDING REQUIRED
DEVELOPMENT PERMIT (Land dedication w/o compensation; and/or conformity to development standards & guidelines.)	Low All costs are recouped through developer fees	Familiar process, therefore relatively easy to administer. Does not require landowners to negotiate with each other. Only works when each parcel has an area capable of development.	None.
MULTIPLE-OWNER SPECIFIC PLAN (Implemented by Open Space, Dedications, Assessments or impact Fees.)	Moderate Planning costs are recouped from fees. May be difficult to start cooperative efforts	Requires cooperative landowners.	None
IN-LIEU OR IMPACT FEES Also referred to as development or mitigation fees	Moderate to high. Uses existing development administrative structure. Fees can be used to cover administrative costs. Requires a large commitment of gov't staff time. High costs if need to create new public or nonprofit entity to purchase and manage land or easements.	Once the mitigation ratios and fee structure are established programs easy to understand and administer. Land acquisition program is necessary.	Not generally required.
TRANSFERABLE DEVELOPMENT CREDITS – TDCs (negotiated)	Low costs to local government Needs acquisition entity and broker or third party agency to facilitate the negotiations between senders and receivers.	Requires landowners to negotiate with each other. Relies on market incentives	None for acquisition. Creates no income stream. Need funds for long-term management of land or easements acquired.
TRANSFERABLE DEVELOPMENT CREDITS – TDCs (by ordinance)	Local government may participate as a buyer and seller of TDCs. High transaction costs.	Same as above, plus requires third party to act as broker/banker. Potential market failure if there is an imbalance between the number of senders and receivers or insufficient development incentives	Same as above.
LAND READJUSTMENT/ JOINT VENTURE PARTNERSHIP	Very low. Planning costs during land assemblage stage are born by the private association. Later planning costs associated with setting up an assessment district for infrastructure improvements & open space management can be recouped through assessment funds.	Moderate. Without guiding legislation each local, state and federal agency will need to decide how to treat a land readjustment association and whether to recognize the association's right to submit a re-subdivision plan for approval. Rights of non-participating landowners must be considered.	None.
TRADABLE CONSERVATION CREDITS	Relatively high planning costs but similar to costs of other comprehensive conservation programs. Credit registry system required, creating ongoing administrative costs, but registry and other costs may be recouped from credit transfer fees. Ongoing administrative costs less than for programs requiring discretionary approvals.	Complex and difficult to explain. Once established, administration is mechanical, not requiring discretionary actions to certify compliance or acquire land.	None for acquisition.
LAND DONATION OR EXCHANGE	Low to moderate where the donating agencies have clear enabling authority to donate or exchange land. If special legislation is required admin. costs can be high. Often achieved by a Memorandum of Understanding (MOU) between the agencies.	Straight donations of land to a conservation program from an agency with the authority can be relatively simple. Land exchanges are often complex. Exchanges of public land for private land can activate NEPA and CEQA which adds time and cost to the process.	None for acquisition. Administrative and processing cost will be incurred. If conservation is not the chief mission of the donating agency approval process may be difficult.
MITIGATION BANKING	Once a mitigation bank is established, administrative costs for all projects using the bank may be lower than accomplishing mitigation on a project-by-project basis.	Most of the complexity is associated with unfamiliarity of the concept and the large tracts of land usually involved. Complex agreements with many agencies may be required depending on the resource.	None unless the agency wants to expand the size of the mitigation bank by pre-acquiring mitigation land and receiving reimbursement over time by developers paying mitigation fees.
PURCHASE OF DEVELOPMENT RIGHTS	High transaction costs which may be borne by local land trust or conservation agency. Need to create monitoring funds.	Terms of conservation easement need to be negotiated. Conservation easements require perpetual monitoring to enforce terms.	Substantial unless funded by in-lieu fees in areas of high development demand and loose regulatory framework conservation easements may cost close to 100% fee acquisition. Costs of public ownership are avoided.

# Strengths & Weaknesses

QUALITY OF PROTECTION PROVIDED	LEGAL ISSUES	PUBLIC ACCEPTANCE	SUCCESS RATE OF PROGRAMS
Project-specific -may result in uneven protection and fragmented habitat. Good for small area habitats, e.g., vernal pools; edaphic plants.	Dolan and Nollan cases require careful attention to proving nexus and 'rough proportionality' and avoiding unreasonable restrictions on development.	High due to its tradition.	Many examples exist of successful dedications of wetlands vernal pools. Only works for limited open space protection and/or specific habitat areas. Does not address large-scale multi-owner and multi-species protection.
Depending on size of the plan area — may result in larger contiguous habitat area protection. Can not address large-scale multi-species protection.	Same as above.	Quite high. Less familiar process than individual development permits.	Many successful examples, however, the ratio of open space or habitat protected to area developed is often low.
Works best where open space lands can be purchased incrementally or where there is a low demand for development. Good technique for agricultural land preservation. Forces rational prioritization of land acquisitions. May not result in contiguous habitat or open space protection	Nexus issues may arise for broad application of fee for open space areas, particularly where landowners without specific open space values are required to pay fee.	Varies.	Amount of open space preserved depends on size of fee and timing of development and real estate cycles. May increase cost of conservation land, therefore requires flexibility in choice of open space lands to be acquired.
Better for small-scale particularized open space areas or habitats.	None.	Receiver areas may cause NIMBY reactions. Requires strong community support and clear relationship between sending and receiving areas.	Those TDC programs that recognize market realities, provide strong economic incentives and a strongly enforced regulatory environment are most likely to succeed. No strong link to overall conservation goals. May result in fragmented open space protection.
Ideally creates rational development patterns and preserves community separators. Good for agricultural preservation. Least valuable habitat may be preserved first. Price of TDC determined by development demand rather than by conservation values. Limited conservation certainty. Works best for agricultural land or dispersed habitat.	Mandatory sending areas may create "takings" issues. If sender areas are mandatory, need upfront fees to purchase TDCs. Governments must ensure adequate links are established between the impacts of development in the sender areas and the burdens placed on development in the receiver areas.	Same as above, plus value of land will be affected within the sender and receiver areas.	Difficult to identify sender and receiver areas. Works best with private nonprofit entity or quasi-governmental agency acting as broker: plus seed money to create TDC bank. Works better in areas where development pressures are high and community is supportive of increased development in receiver areas.
High. The land readjustment method should create a single contiguous open space parcel if physically possible. This open space parcel can then be conveyed to an appropriate public or nonprofit management entity, or it could be managed by the private association by agreement.	Complex legal issues unless guiding legislation is created. Landowners decide on the proportional value of contributed lands. "Takings" concerns may arise if the regulatory agency requires the pooling of land ownership prior to issuing entitlements.	Currently low. Has little precedent in the US. The possibility of eminent domain to purchase hold-outs makes landowners wary. More experience and community & local government participation is needed.	Few US. attempts. In other countries it has a high success rate where it is used to facilitate modernization of lot patterns & rebuild after natural disasters. In Ormond Beach, California, land readjustment successfully protected beachfront properties in exchange for an inland hotel development site owned by the city redevelopment agency.
Emphasis is on meeting identified conservation goals. Well suited for large-scale habitat or agricultural land. Adaptable to changing biological information. Could work for multi-species program if species share similar habitat. Not well suited to narrowly targeted conservation goals and unique properties.	Does not interfere with local zoning and planning. If mandatory, must meet Nollan and Dolan tests, but is well suited for doing so.	Moderate to high among environmental groups where introduced in planning stages. Untested as to general public acceptance.	No working examples yet. May nest well with other conservation strategies. Helps to resolve constraints of complex land ownership patterns.
Generally good.	Legal authority of donating or exchanging agency needs to be clear. Land exchanges can be very controversial when a conservation agency exchanges public land for private land and litigation sometimes occurs.	Generally high for donations. Acceptance of land exchanges varies depending on the circumstances. Very difficult for a conservation agency to sell donated land unless it clearly has no open space value.	Unknown. More work needs to be done to document successes and failures.
Depends on the quality of the open space/habitat land placed in the mitigation bank. Generally better than individual mitigation's Care must be taken to match the characteristics of the property to be protected in the land bank with the mitigation requirements.	Future development projects may risk legal challenges that the property in the mitigation bank does not meet the mitigation requirements, or does not have appropriate kind of restoration/management.	Mixed. Some environmental groups argue that restored mitigation banks do not adequately replace lost habitat especially for wetlands/vernal pools.	Mixed. Depends on type of habitat or resource being mitigated. Wetlands mitigation banks are particularly controversial. Large-scale mitigation banks may provide better quality, contiguous habitat in a more cost effective manner than individual project mitigation's
Habitat land is protected in perpetuity. Limited funds for easement acquisition forces prioritization of open space or habitat lands.	Holder of conservation easements need to be prepared to monitor and contest, in court if necessary, any violations of the terms of the easement.	Voters have shown reluctance to pass bond measures or additional taxes to pay for open space or habitat land acquisitions. Need very strong local support.	Works best when combined with other conservation strategies requires strong regulatory framework. Propositions 70 and 119 in CA provided funds for habitat and open space acquisition and restoration. No subsequent bond measures have passed.

## Characteristics of Land That Influence Implementation

The first step in preparing an implementation strategy is to evaluate the circumstances being faced. The most important of these circumstances often have to do with the character of the land subject to the planning effort. Four land-based characteristics are particularly important to selecting implementation techniques.

### *Number, Distribution, and Motivation of Landowners*

The degree of conflict over conservation objectives will be determined in large part by land ownership patterns and owner characteristics. In the case of a single unified ownership, implementation can often be achieved by two-party negotiation. If there are many landowners, implementation will be more complex. If there is one dominant larger landowner along with several smaller landowners, the smaller landowners may feel powerless and be unwilling to cooperate with a broader effort focused on the larger landowner. Negotiation will be hard if a landowner has high expectations for the land's development potential or if the landowner is emotionally attached or has long-term dreams for the land, such as building a retirement home. On the other hand, while investors and developers may be less willing to make land donations or dedications for altruistic purposes, they do understand the value of a negotiated solution rather than protracted uncertainty regarding the development potential of the land.

### *The Functions of Habitat and Open Space*

The type of resource being protected and the geographic association of open space and conservation values will also determine the most appropriate implementation technique. For example, if the land has an economic use that can continue after conservation measures have been applied, such as agricultural land that also provides habitat for Swainson's hawk, then the use of conservation easements (i. e., a PDR program) would be ideal. In this case, public ownership would be unnecessary and even undesirable. Furthermore, standard land use regulations would not offer sufficient per-

manence to assure that an adequate amount and pattern of habitat is preserved. On the other hand, extremely sensitive site-dependent habitat areas may require public acquisition and controlled public access. When open space or habitat values are geographically dispersed over noncontiguous sites, solutions differ from when a habitat is concentrated in one geographic area. It is often the case that several open space and conservation values occupy the same geographic area. This intersection can lead to cost effective and politically acceptable implementation because several open space and conservation objectives can be met simultaneously. For example, habitat areas often also have value as recreational or scenic open space, community separators, watershed protection, or wildfire hazard reduction.

### *Number of Jurisdictions Involved*

The more jurisdictions that are involved, the more complicated the implementation efforts. When working with a single local jurisdiction, negotiations will involve that jurisdiction, the interested state or federal agency, and the landowners. Working with multiple local jurisdictions is more complex because the jurisdictions often have diverse planning objectives, and in many instances are competing with each other in some way. Similarly, when more than one state and federal agency is involved there can be different conservation objectives and standards. Resolving these potential conflicts typically requires complex inter-governmental agreements between the participating jurisdictions. Despite its complexity, the comprehensive planning approach involving multiple jurisdictions has two important advantages over single jurisdictional conservation planning: more opportunities for securing state, federal, and private foundation funding sources; and the sharing of costs associated with conservation programs. When all the jurisdictions in a region plan for conservation together, potential inequities can be prevented.

### *Pattern of Development Potential*

The selection of an implementation technique will also be significantly guided by the degree and intensity of market demand in the conservation area

In areas where development pressures are low, standard land use regulations often suffice. When development pressures are high, standard land use regulations typically will not offer adequate protection—a circumstance leading to the need to acquire land or other enforceable restrictions. Conservation efforts also face a dichotomy related to business cycles—when the real estate market is strong, development-based funding is easier to secure, but habitat and open space lands to be protected will be correspondingly expensive; when the real estate market is weak, land prices are lower, but development-related revenue is harder to capture. Whenever possible, conservation strategies should not rely entirely on development-related sources. More stable funding sources allow resource managers to time acquisitions to take advantage of the business cycle and fluctuations in real estate prices.

## Examples of Hybrid Strategies

We have devised five hypothetical conservation scenarios to illustrate hybrid strategies. Figure 3 defines each of them in terms of the land-related characteristics discussed above. In reality, each conservation situation involves multiple permutations and combinations of land-related characteristics and other circumstances deserving attention. Accompanying each scenario is a list of the appropriate implementation techniques selected from those discussed above. A discussion of how each technique applies to the scenario is also included.

### *1. Rural Area-Multiple Plant Species Habitat Management Plan*

This scenario involves protection of an edaphic association of plant species habitat within a rural county facing growing rural residential development pressures. The following combination of conservation techniques are recommended:

- Development permit: Impose dedication requirements as a part of the development approval process. For example, a “rare plant conservation overlay zoning district” requiring on-site dedication of conservation easements for rare plant habitat and clustered development on land with lower habitat value, could be adopted and implemented by the county.

FIGURE 3

## Conservation Scenarios - Land Use Characteristics

CONSERVATION SCENARIO/ LAND USE CHARACTERISTICS	LANDOWNER PATTERNS	OPEN SPACE FUNCTIONS	NUMBER OF JURISDICTIONS	DEVELOPMENT PATTERN/ POTENTIAL
1) <b>Rural area with multiple endangered and threatened plant species; proposed ecological reserve in rural residential setting — HMP/OS Plan</b>	Many hundreds of landowners – large & small, rural residential lots; partial buildout	Edaphic plants on rare soils; rural setting	1 county; 1 special district and state resource agencies	Mixed pattern related to topography & infrastructure; moderate demand for rural residential lots
2) <b>Scenic agricultural valley close to large metropolitan area; proposed annexation and development to adjacent city — general plan amendment (GPA)</b>	Several large and medium sized landowners	Vineyards; scenic open space; community separator	1 county; 1 LAFCO 1 city	High demand for golf resort in valley and high end housing on hillsides
3) <b>Commercial forest area with antiquated subdivision and endangered bird habitat</b>	Many small contiguous parcel owners	Spotted owl habitat on most parcels	2 counties; state and federal resource agencies	Development applications pending for rural homesteads
4) <b>Expanding urban area within sphere of influence of suburban city; wetlands and vernal pools on 20% of land area</b>	Several landowners; few large and many small	Wetlands and vernal pools	1 city, 1 county 1 LAFCO; 2 special districts; state and federal resource agencies	High demand for mixed residential development and community serving retail
5) <b>Rural area with active mineral exploitation and several endangered and threatened species — HCP</b>	Many thousands of landowners and some large corporate landowners	Several plant and animal threatened and endangered species	1 county; 5 cities state and federal resource agencies	Intense demand for mineral exploitation; moderate urban development demand

- **In-lieu fees:** Charge impact fees in lieu of dedication on new development within the conservation planning area. Such fees would be adopted by county ordinance in response to CEQA-related mitigation measures and state and federal mandates. These fees would mitigate losses of habitat by securing habitat in other parts of the conservation area.
- **Land acquisition and mitigation banking:** This technique could be used for the portions of the conservation area that are most suitable for rural or suburban density development and have the highest habitat value. Funding for such acquisitions could come from a combination of sources including in-lieu fees, state agency grants, and funds from other local agencies who face mitigation requirements in other portions of the county.
- **Purchase of development rights:** This approach could be used for parcels where low-density, rural residential development presently exists. In these areas, easements could be purchased for the undeveloped habitat portions of parcels. Funding for such easement purchases could come from in-lieu fees or other mitigation funding. It may also be possible to fund easement acquisitions from benefit assessment funds related to regional wildfire management. Such wildfire management is necessary to control fuel loads in fire-prone areas and thereby reduce hazards to life and property associated with wild fires. Such management is beneficial to rare, edaphically related plant species.

## **2. Scenic Agricultural Valley Near Core of Metropolitan Area Subject to Major Development Proposal**

The goal in this scenario is to allow sensitively designed development on the valley floor while preserving the steeper surrounding hillsides and the majority of the existing vineyards located in the valley. The hillsides and outer edges of the valley need to be permanently protected to separate this community and the nearby suburban density development. The following conservation techniques are recommended:

- **Development permit process (development guidelines):** Impose restrictions on grading hillsides and building

on ridge lines through a hillside combining district in the general plan.

- **Transfer of development credit program:** Create a TDC ordinance that places most of the hillsides and vineyards in a sender area and the valley floor in a receiver area. Developers wishing to build above the base rural density zoning will be required to purchase TDCs from landowners in the sender areas. A local land trust could be created to acquire and manage a revolving “bank” of TDCs and, where funds can be raised, acquire and permanently extinguish the development rights on the most sensitive or scenic parcels.

## **3. Commercial Forest Area With Antiquated Subdivision and Endangered Bird Habitat**

The creation of legal parcels-of-record from antiquated subdivisions through the use of “certificates of compliance” are becoming an increasing concern for local governments in California especially when these lots create development potential in ecologically sensitive areas or areas without sufficient infrastructure or services. If such lots are in an ecologically sensitive area, it may not be advisable to allow even low density minimal development. The following conservation techniques are recommended in this particular scenario:

- **Land readjustment:** By breaking down property boundary lines and forming one large parcel owned by a corporate entity, the landowners create a parcel that will have a conservation value greater than the sum of its individual parts. The advantage for the shareholders of the new entity is that they will be in a better position to fund a conservation buyer and attract funds for the acquisition of their parcel. Having limited staff and resources, most public resource agencies would not have the time to negotiate individually with every single lot owner. The possibility, however, of being able to acquire a major tract of endangered bird habitat all in one transaction should interest either a public resource agency or a private buyer who requires mitigation for a large-scale project. The owners of the consolidated parcel now have the option of

doing a land exchange or a mitigation bank.

- **Land exchange or sale to resource agency:** The consolidated parcel could be exchanged with the BLM or United States Forest Service for developable surplus public land in the same region. Although such public-private land exchanges can be lengthy procedures, the value of the conservation parcel offered should help to expedite the process. Alternatively, if public funds can be raised through the federal Land and Water Conservation Fund and through private nonprofit organizations, an outright sale to a public agency or a nonprofit land trust could be completed. It is also possible that some combination of sale and exchange could be the most expeditious solution.
- **Mitigation banking:** The consolidated parcel could be sold to a private buyer (a corporation or individual developer) who has a significant development project planned that needs substantial mitigation for similar endangered bird habitat. Such an arrangement would require the adoption of an HCP, an agreement with the regulatory resource agencies that the project can be mitigated, and a determination of the mitigation ratios required.

## **4. Expanding Urban Area on Edge of Suburban City With Wetlands and Vernal Pools Located on 20 Percent of the Land**

In this scenario, where there are many landowners and the area is ripe for development, the following conservation strategies are recommended:

- **Multiple owner specific plan:** Through the specific plan process, the cost of preserving the wetlands and vernal pools can be treated like an infrastructure cost and spread over all the landowners in the plan area. The cost of acquiring the parcels with wetlands and vernal pools should be estimated by accepted appraisal techniques and added to all the other infrastructure items, such as roads and sewers. The landowners with wetlands in the plan area will receive compensation for dedicating wetlands from the other landowners in the plan area through the payment of assessments or fees.

Development permit: Require that landowners with wetlands and vernal pools in the specific plan area set aside these habitat lands and adhere to design guidelines on adjoining developable parcels to create sufficient buffer zones and appropriate landscaping between the developed areas and the wetlands. Use clustered development patterns to maximize density on parcels that have dedicated wetlands.

In-lieu fees: Charge new development within the specific plan area with an impact fee to pay for the acquisition of wetlands and vernal pools within the plan area.

### **5. Rural Area With Active Mineral Exploitation and Several Threatened and Endangered Species**

In this scenario, there are so many thousands of acres and the economic development potential is so great that even a limited acquisition program would be prohibitively expensive. The following conservation techniques are recommended:

- Tradable conservation credits: Establish a point system for evaluating the conservation value of all habitat parcels within the planning area; establish adjustments for reserve design considerations; estimate system wide conservation value and establish conservation ratios. Once a conservation point system has been established, habitat transactions can occur and landowners wanting to develop or proceed with mineral exploitation, can acquire conservation credits equal to the conservation value lost, multiplied by the conservation ratio. Landowners wishing to voluntarily preserve habitat can sell conservation credits for each conservation unit preserved.
- In-Lieu fees: Charge new development within an urbanizing zone with in-lieu fees. The urban zone would not be subject to the credit program because the existing habitat is too fragmented or too close to the urban area to have long-term conservation value. Revenues from in-lieu fees could be used for targeted purchases of sensitive habitat areas.
- Land purchase: Acquire the most sen-

sitive habitat areas either with in-lieu fee revenues, state or federal grant funds, or by offering owners of such lands extra tradable credits for dedicating their land.

- Mitigation banking: This technique could be used by any landowners who want to create and hold credits. These credits could be made immediately available to developers who need them, perhaps at a premium price. Credits would be created by the preservation of habitat as provided by the general tradable conservation credit program.

### **CONCLUSION**

For practitioners applying the above implementation techniques in the real world, the authors suggest the following guidelines.

In order to select the most appropriate and efficient conservation techniques, it is important to fit the tool to the task. Conservation planners and practitioners should not be wedded to a favorite conservation technique, but should choose the tool that fits the particular land use situation and recognizes the inherent biological, social, economic, and political characteristics and problems being faced.

A thorough understanding of the nature of the conservation problem and a realistic appraisal of the actual constraints are essential in the early design and formulation stages of any large-scale conservation plan. These constraints will shape the scope and nature of the plan and the choice of implementation techniques. However comprehensive and bold a conservation plan is, it will fail if commitment to feasible implementation is not made in the early planning stages.

It is unlikely that a single conservation technique will be sufficient. In the world of complex land use patterns and circumstances, balanced and complementary implementation tools will be needed to achieve even relatively modest open space conservation goals.

Compensatory regulation will often be used in combination with direct public acquisition. Attaining conservation goals often requires the preservation of certain key parcels that are indispensable. It may

be necessary to have funding available to ensure that such parcels can be acquired because the compensatory techniques typically do not guarantee protection of specific parcels.

Compensatory regulation requires a foundation in a clearly articulated public conservation policy that is supported by the force of law. Conservation or open space planning that involves numerous private landowners requires a clearly articulated and consistently enforced regulatory framework that supports specified conservation objectives. The authors recognize that some compensatory regulation techniques could create market forces that sufficiently support conservation objectives such that reliance on zoning and other police power authority of local government is not essential.

Thus, when conceiving of large-scale habitat and open space resource protection, three common denominators should be present:

- Public acquisition entity and public funding sources: Virtually all large-scale conservation programs will need a funded agency such as a conservancy, land trust, or government organization to acquire and manage open space, habitat land, or conservation easements.
- Rational and standardized general plan and zoning ordinances: Local land use regulations must properly reflect the conservation values of the land and maximize the use of regulatory techniques to protect open space and habitat within the appropriate legal constraints and within the context of urban growth requirements and objectives. Once again, to the extent that programs use a market-based tool, the reliance on traditional planning and zoning may diminish.
- Compensatory Regulatory Techniques: These innovative conservation techniques should be used in large-scale open space preservation plans to leverage limited public acquisition funds and to equitably balance the costs and burdens of habitat and open space conservation between the private landowner/developer and the general public.