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Allocating Water: Economics and the Environment

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Allocating Water: Economics and the Environment
“Allocating Water for a Sustainable Future”
Fritz Paulus, Executive Director
Oregon Water Trust
June 21, 2004

Who is the Oregon Water Trust?

Founded in 1993, Oregon Water Trust is the nation’s first private, non-profit organization dedicated to acquiring water rights to restore instream flows. Crafting cooperative, free-market solutions, we acquire water rights through gift, lease, or purchase from willing landowners and convert them to instream water rights. We focus on streams where small amounts of water can provide significant ecological benefits. The rights acquired are usually held in trust by the State of Oregon and used exclusively to increase in-stream flows for fish conservation, water quality improvements, or recreational use. The result is healthier streams for fish, wildlife, and people.

Why do we need the Oregon Water Trust?

Like many Western states, Oregon has traditionally issued water rights for beneficial uses. Until recently, only agriculture or other out-of-stream uses were regarded as beneficial, and in many rivers and streams, there were more water rights issued than water in the stream. Approximately 80% of Oregon’s river and stream water is diverted for agriculture, completely drying up some streams during the spring and summer months, and leaving others with flows so low that salmon and other fish species cannot reach spawning or rearing areas. Low in-stream flows are one reason the National Marine Fisheries Service listed many Oregon salmon runs as threatened or endangered. Every one of Oregon’s major salmon recovery plans list low in-stream flows as a major factor to be addressed in restoring rivers and the salmon and other wildlife relying on them.

Where do we work?

Oregon Water Trust targets efforts in basins that have historically supported significant fisheries.¹ Within each basin Oregon Water Trust identifies priority streams for which streamflow is a limiting factor for fish habitat and water quality and there is potential for acquiring water rights to convert to instream use to enhance flows. Oregon Water Trust concentrates acquisition efforts on small to medium sized tributaries that provide spawning and rearing for salmonids. In these systems, small amounts of water can provide significant ecological benefits.

What is our approach?

Oregon Water Trust uses science, market-based solutions, and cooperation to get its work done.

¹ Currently, Oregon Water Trust has six priority basins: the Rogue, Umpqua, Deschutes, Hood, Umatilla, and John Day. However, we do take on projects in other river basins when good opportunities arise.

Scientific

Oregon Water Trust uses ecological, hydrologic and water rights data to identify priority streams and evaluate potential water right acquisitions. Analysis of streamflows and habitat conditions includes:

- ❖ delineating fish use and distribution for each segment;
- ❖ documenting the current and historical ecological value of the waterway for fish;
- ❖ evaluating current habitat and water quality conditions;
- ❖ describing the current water availability situation;
- ❖ summarizing the relationship of the water right to other water rights in the stream segment; and
- ❖ evaluating and summarizing the potential benefits of acquired water on fish habitat and water quality conditions.

Oregon Water Trust compiles data on species present, their habitat needs and listing status; instream conditions (*e.g.*, flow alteration, temperature, water quality); and relation of instream conditions to riparian, upslope and watershed conditions and activities.

Market-Based

Oregon Water Trust's market-based approach provides water right holders in Oregon with a variety of incentives to convert their consumptive water rights to instream water rights. These include: income from marginally productive areas, replacement feed for lost production, funding for irrigation efficiency projects, a possible tax break for permanent donations of water rights, and flexibility in managing water rights.

Cooperative

Oregon Water Trust works to develop relationships of trust with farms, irrigators, and others who hold water rights. We build partnerships that are of mutual gain with stakeholders as diverse as soil and water conservation districts, watershed councils, and government agency staff.

What are our goals?

- Acquire water rights and convert them to legally protected, in-stream rights used exclusively to increase stream flows,
- Build collaborations with diverse partners such as farmers, ranchers, watershed councils, environmental advocates, native tribes, government agencies, or other stakeholders,
- Pioneer innovative, market-based and voluntary solutions that promote the long-term stewardship of local rivers and streams.
- Focus on small tributaries where naturally low stream flows are exacerbated by irrigation withdrawals, and where returning even a small amount of water can restore habitat for salmon and trout spawning, rearing or migration,
- Use scientific data to determine priority reaches and the water rights along them,
- Acquire water rights with senior priority dates (some as old as 1856) to ensure that we have first access to in-stream water.

How is a market being created to purchase water rights for ecological benefit?

“Changing wealth has changed the demands for our natural resources,” says Terry Anderson, Executive Director of Property and Environment Research Center. His statement is prophetic. In recent years, society has demanded that we seek ways to minimize human impact on fish and wildlife and the environment in general. This is evidenced by the numerous federal and state regulations that were enacted in the later part of the 20th Century. As our society grows wealthier, citizens have more time and money to expand their concerns beyond mere subsistence; they also have more time to recreate in the outdoors, especially in areas as beautiful as Oregon. Consequently, our culture has begun to expect a cleaner, healthier environment.

A new law allows a market to create instream flows.

In 1987, the Oregon Legislature adopted the Instream Water Rights Act, which allowed public or private entities to lease or purchase water rights and convert them to instream flow rights.² The statute reads in relevant part:

Any person may purchase or lease all or a portion of an existing water right or accept a gift of all or a portion an existing water right for conversion to an in-stream water right. Any water right converted to an in-stream water right under this section shall retain the priority date of the water right purchased, leased or received as a gift (emphasis added). ORS 537.348(1).

Oregon’s adoption of the 1987 Instream Water Rights Act epitomizes the fundamental concept that with increased wealth follows increased demand for a healthier environment. Since the inception of the Act, water transferred or leased instream was considered a “beneficial use.” Prior to this, water placed instream was considered “wasted” water and therefore was not protected from other irrigators upstream and downstream. ORS 537.332 and ORS 537.334 define a beneficial use as a “public use.” A “public use” under the Act is defined as recreation, conservation of fish and wildlife, pollution abatement, or navigation. ORS 537.332(5).

² There are two other methods to create instream flow under Oregon law. These two ways may be initiated only by state agencies and result in creation of instream water rights with relatively junior priority dates. One way is by *conversion* of minimum perennial streamflows adopted by the legislature in 1955. In 1987 the State legislature directed the Oregon Water Resources Department (OWRD) to review and “convert” all remaining minimum perennial streamflows to instream water rights to be held by the State for water quality, recreation, pollution abatement, conservation, and navigation. Since then, over 550 instream water rights were created on Oregon’s waterways from pre-existing minimum flows. ORS 537.346. The second way is by *application for new appropriation* from the Oregon Departments of Fish & Wildlife, Environmental Quality, and Parks and Recreation. These instream rights are only created at the request of one of these entities and the Oregon Water Resources Department may not act unless a request is made. OWRD has the final say in this request and has the option to accept, reduce, or reject these requests. OWRD is the holder of all instream water right certificates. ORS 537.336.

Creating instream water rights by acquisition has an advantage of the other two methods, because the priority date of water right is retained when it is transferred to instream use. Thus acquiring senior water rights for instream use is an excellent means to restore streamflows.

Consequently, the Act created a market to acquire ecologically beneficial water. Now a person or entity could negotiate with willing land owners to purchase a surface water right and convert it to an instream water right. Another key factor of the law that helped create a market for environmental water right is that a water right acquired through gift, lease or purchase would retain its original priority date. Without this provision, acquired water rights would assume a junior status and have limited ecological benefit. But for the ability to retain the priority date there would be little incentive for a person to acquire water rights under the Act, thus rendering its purpose meaningless.

What are the incentives for landowners to trade water for ecological benefit?

By providing a variety of incentives to water right holders in exchange for water rights, including compensation, technical assistance, and more inefficient use of water, Oregon Water Trust helps convert water rights in a way that is mutually beneficial for people and the environment. The water right holder may choose to work with Oregon Water Trust using short-term, long-term, or permanent water right agreements. The following list describes some of the tools that have been developed by the Oregon Water Trust and other water trusts over the last ten years. Often a transaction may involve more than one of these tools. In the real transactions listed later on, there are examples of how these tools have been put to practical use.

- ❖ Lease. A lease is a temporary acquisition of a water right for five years or less. Oregon Water Resources Department (OWRD) has an expedited process to approve instream lease applications. Applications must be filed by June 1 of each year. Typically, irrigators lease water rights instream for an entire irrigation season and switch to crops that use less water, rotate crops, or let land go fallow for the length of the lease agreement.
- ❖ Split Season Lease. A split season lease allows an irrigator to use the water during a portion of the growing season, and then leaves the water instream during the rest of the season.³ This transaction works particularly well when an irrigator is growing a crop with multiple harvests, such as alfalfa hay, and when the water is needed instream for only a short portion of the growing season, such as late summer or fall. The irrigator receives the revenue from his first harvests and is paid not to use his water at the end of the season.

³ In Oregon, split-season leases are authorized under ORS 537.348(3), which provides in relevant part:

A lease of all or a portion of an existing water right for use as an in-stream water right under ... may allow the split use of the water between the existing water right and the in-stream right during the same water or calendar year provided:

- (a) The uses are not concurrent; and
- (b) The holders of the water rights measure and report to the Water Resources Department the use of the existing water right and the in-stream water right.

- ❖ Dry Year Lease Option. A dry year lease option gives the option holder (the Oregon Water Trust) the right to use the water in dry years. Such an option could be temporary or permanent. In this type of arrangement, the farmer irrigates in wet years, but leaves his land fallow in dry years, and is instead paid for his water which is left instream. This type of lease, especially if it is long-term, can be a cost-efficient way to provide water instream when it is needed.
- ❖ Permanent or Time-Limited Transfer of a Water Right. A permanent acquisition is the transfer of ownership of a water right, as well as a change of use to instream flow. A permanent acquisition effectively separates the water from the land to which it was appurtenant (unless the water right and the land are acquired together). For permanent and long-term agreements (i.e., more than five years but less than permanent), a transfer application still must be filed with OWRD. Due to the longer-term nature of deals involving transfers, the administrative process is longer and involves more scrutiny.
- ❖ Point of Diversion Changes. Often a smaller tributary that has critical habitat suffers from low flows when the main stem river does not. Changing the point at which water is withdrawn for human use from the tributary to the main stem may mean that enough water is left in the tributary to support environmental needs, while creating little impact on the main stem.
- ❖ Source Switch. Switching sources of water (e.g. from surface water to groundwater or stored water) can sometimes result in a net improvement to streamflow. At the same time, it requires a thorough knowledge of the hydrology of the system to ensure an improvement in one place isn't at the cost of damage to another source.
- ❖ Allocation of Conserved Water. Improvements in irrigation methods often result in the use of less water to farm the same crop by eliminating leaky ditches or excess evaporation. All or a portion of the saved water can then become protected as an instream water right by using the state's Allocation of Conserved Water statute, ORS 537.455 *et seq.*⁴

⁴ The 1987 Oregon legislature amended the state's water laws to provide incentives for water rights holders to conserve water resources by making more efficient use of water. The Conserved Water Program makes it possible for a water user who voluntarily conserves water to retain control over a portion of the saved water. The water user has several options for reallocation of 75% of the saved water, including using it to irrigate additional lands, leasing or selling the water, or dedicating the water to instream use. In exchange for granting the water user the right to reallocate a portion of the saved water, 25% of the conserved water is allocated under the law to the state as an instream water right. To the extent that Oregon Water Trust contributes resources to a conserved water project, we encourage alternatives that increase instream flow to the maximum extent feasible.

- ❖ Conservation of Riparian areas. In situations where farmers are irrigating riparian habitat, retiring such land from production with a conservation easement or putting it into a long term lease pairs nicely with a simultaneous change of the associated water right to an instream flow right. This approach works well in conjunction with the Conservation Reserve Enhance Program that is managed by the Natural Resource Conservation Service of the USDA.
- ❖ Rotational Pool Agreements. These agreements are set up between water right holders on a particular stream. The agreements can provide that each year one of the users will refrain from irrigation or that all users will decrease their consumption pro rata to ensure that enough water is left instream for environmental needs. These agreements are a way to share the burden of meeting environmental needs. They work in part because of the collaboration and sense of local control that they offer the water users.

How do we value water rights?

Water rights can be valued using accepted techniques that create an estimation of fair market value. These techniques include: (1) sales comparison⁵; (2) income capitalization⁶; and (3) land price differential⁷. Primarily, the Oregon Water Trust negotiates lease and purchase prices using the sales comparison approach to estimate fair market value. We rely largely on our own water rights data assembled over the last 10 years; however, a formal appraisal might be employed on larger deals where greater substantiation is required by our board of directors and funders. An appraisal also might

⁵ The sales comparison approach involves comparing the subject water rights with other similar rights that have recently been sold. The prices generated from the comparable sales then suggest a range in which the subject water rights should be sold. For instream flow transactions, the sales comparison approach can effectively evaluate the market price for water where there have been active instream water sales in a particular basin. However, where the instream flow market is “thin” (i.e., not active or non-existent) the sales comparison approach is not a very useful valuation tool.

⁶ The income capitalization approach involves analyzing the stream of net benefits a property will generate over time to arrive at a value estimate of that property. With regard to valuing water rights, the income capitalization approach allows one to identify and quantify the annual net revenue from agricultural production associated with the water to determine the value of the water right in that activity. In taking an income capitalization approach, the Water Trusts have typically used a farm crop budget analysis to determine water right values. Farm crop budget analysis allows one to determine the revenue share associated with water in irrigation by subtracting out the costs of all inputs except water (such as fertilizer, harvest, equipment and management costs) from the total crop revenue.

⁷ The land price differential approach involves assessing the value of a particular piece of land with water rights and the value of that same piece of land without water rights. Such an approach will usually involve analysis of other irrigated land sales and other dry-land sales within the geographic area of a water right being considered for acquisition. The difference between the two values can be said to represent the value of the water rights.

be used for transactions that involve different types of deals or ones that are in watersheds where Oregon Water Trust lacks sufficient water rights information. In most cases the price is ultimately determined through negotiations with willing water right holders, which in effect leads to a true “fair” market value.

How much water has Oregon Water Trust leased or purchased?

It has been over ten years since our first paid instream lease on Buck Hollow Creek of the Deschutes Basin and our effectiveness as an organization has increased dramatically. In 1994 our portfolio amounted to two leases totaling slightly over one cubic-foot per second (CFS). In 2003 our portfolio rose to 84 projects that protected nearly 124 CFS for in-stream use (See Page 10). A snapshot of Oregon Water Trust’s protected instream water rights by basin for 2003 is also attached (See Page 10).

Approximately 90% of the water rights instream come from leases, five years or less. In 2003, we had 64 active short-term leases. The remaining 10% of our portfolio or approximately 12 CFS comes from 12 permanent paid acquisitions, one permanent donated deal, three conserved water projects, a 25-year conservation easement, and a 10 year time-limited transfer. Our success on permanent transactions has largely come from transfers where there is a previous change of land use from irrigation to another purpose, such as conservation. We have also had success doing permanent deals involving point of diversion changes and source switches.

What has Oregon Water Trust paid for leases and purchases?

In 2003, Oregon Water Trust paid \$317,017.85 for water right leases and purchases. The amount of donated water instream amounted to \$442,617.00. The average price paid by Oregon Water Trust over its 10-year history for leased water is \$18/acre-foot/year and \$74 /acre/year. Permanent transactions have averaged \$156/acre-foot and \$1055/acre. Prices vary depending on basin, location in the watershed, seniority, an ecological benefit. Whether it’s a lease of water right rights or an outright purchase, Oregon Water Trust focuses on deals involving less productive land that have water rights on streams where flow is a limiting factor to anadromous fish habitat. Consequently, we are looking for deals where the instream value is higher than the out of stream value. This is the nexus where a market for ecological water can best be created.

What are some of our recent transactions?

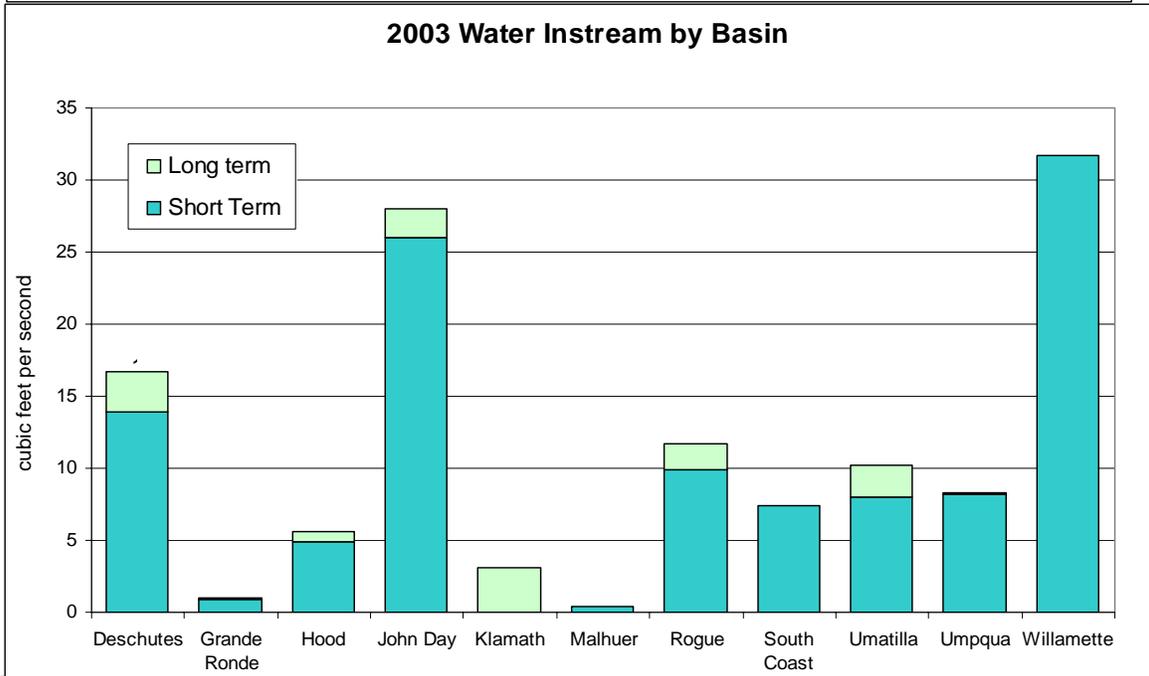
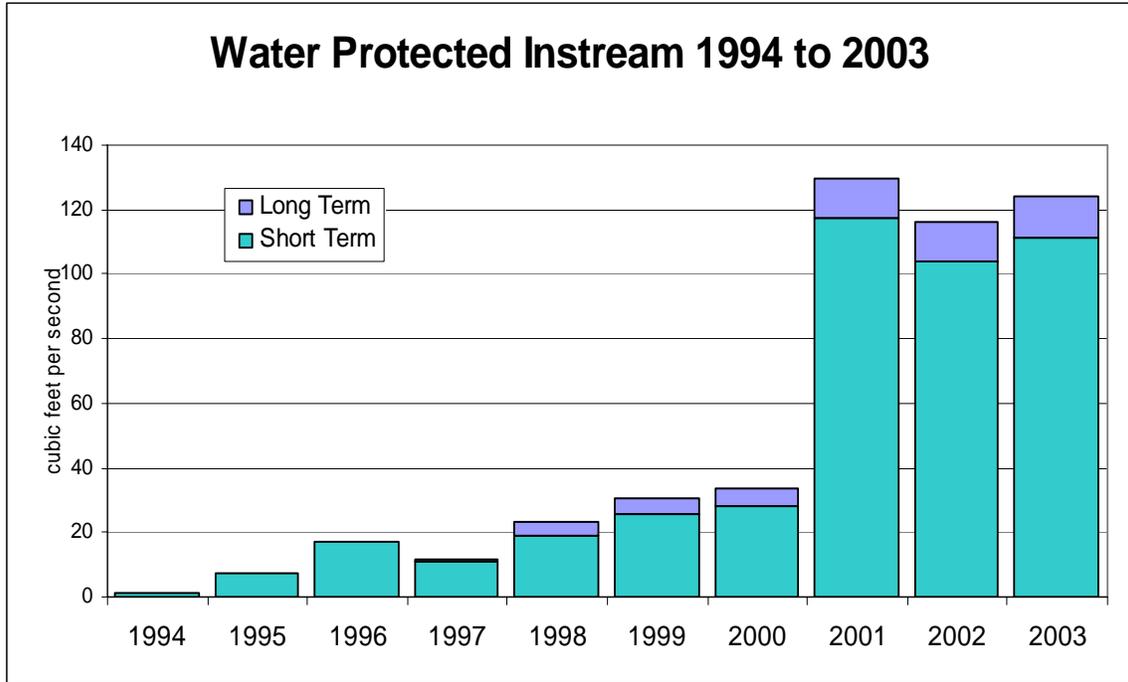
- ❖ Trout Creek Ranch, Trout Creek, Deschutes Basin, 2004. Western Rivers Conservancy, at the time River Network, acquired an interest in Trout Creek Ranch and transferred ownership of 3,200 acres to Portland General Electric. Of these acres, there were 102 irrigated acres that OWT would help PGE transfer instream permanently. Oregon Water Trust paid PGE \$124,500 for 102 acres of water rights at a rate of up to 2.59 CFS (1,162 gallons per minute). These funds were used to build a barn on the ranch for OMSI educational facilities for school children during summer field trips. Oregon Water Trust is in the process of

finalizing the Trout Creek Ranch transfer. This transaction was funded through the Bonneville Power Administration provincial program.

- ❖ Thompson's Mill Non-generation Agreement, Calapooia River, Willamette Basin. 2003 and 2004. Oregon Water Trust and its project partners have reached a unique agreement to not divert water from the Calapooia River that otherwise would have been used to generate electric power at the historic Thompson's Mill, near Shedd, Oregon. The "Non-Generation Agreement" improves flow by maintaining up to 180 cubic feet per second during the April through July Spring Chinook salmon run into the upper watershed. In exchange, the mill owner was compensated approximately \$20,000 by PacifiCorp for the lost electricity revenue during this period. Oregon Water Trust then paid PacifiCorp approximately \$8,500 in 2003 to purchase replacement power on the open market. In 2004, similar agreement was reached with the mill owner and PacifiCorp. The Non-generation Agreement will be replaced by a water management plan and permanent instream water right after the mill and its water rights are purchased by the Oregon Parks and Recreation Department in 2004. Oregon Water Trust's contribution to this project was funded through the Columbia Basin Water Transactions Program.
- ❖ Middle Fork John Day River Instream Lease, 2003 and 2004. Oregon Water Trust and the Bureau of Reclamation reached a two-year agreement to lease the most significant water rights in the Middle Fork John Day River from a rancher near Austin, Oregon. The John Day River is the second longest undammed river west of the Mississippi and has no fish hatcheries, so is an important refuge for wild fish. The Oregon Water Trust has now protected 11.2 cubic feet per second of senior water rights through the most critical spawning beds of spring Chinook salmon, Steelhead Trout, and Bull Trout. This agreement nearly doubles the stream flow and provides ideal spawning and rearing conditions through the late summer months while increasing the water available to downstream irrigators. The lease price was \$50,000 per year on a water right that amounts to 2180 acre-feet, which equates to \$22.94/acre-foot/year. Oregon Water Trust's portion of this transaction was funded through the Bonneville Power Administration's provincial program.
- ❖ Comfort Ranch, Calapooya Creek, Umpqua Basin, 2004. Oregon Water Trust entered into a five-year agreement to lease the most important water right on Calapooya Creek in the Umpqua Basin, not to be confused with the Calapooia River in the Willamette. The water right is for 1 CFS and 200 acre-feet. The lease was purchased for \$7,000 per year, or at \$35/acre-foot/year. Oregon Water Trust paid a premium for this lease because it was the most ecologically significant water right on our priority stream in the Umpqua Basin. It supports fall Chinook, winter steelhead and cutthroat trout. It is also ranked by the state as a high priority for flow restoration due to the large number of water rights and high optimism for fish restoration. Large water withdrawals can create low flow

problems in the summer months. Calapooya Creek is listed as water quality limited for pH, habitat modification, flow modification, temperature, and dissolved oxygen and is a high priority for water quality restoration.

- ❖ The Nature Conservancy, Juniper Hills Preserve, Lost Creek, Crooked River Basin, 2004. TNC purchased the 18,634-acre Juniper Hills Preserve in 1998. Oregon Water Trust is working with TNC to protect 2.41 CFS (1,082 gallons per minute) of Lost Creek water instream all the way down to Prineville Reservoir. Water should be transferred instream during the 2004 irrigation season. The stream supports a threatened species of redband trout and will help to contribute colder water to the Crooked River drainage, a 303(d) listed stream for temperature. This transaction is funded through the Columbia Basin Water Transactions Program.



[Note: Short term includes paid and donated leases and water use agreements less than or equal to 5 years. Long term includes permanent acquisitions, conserved water projects, time limited transfers, and conservation easements]