California Institute of Technology

Financial Statements

For the Years Ended September 30, 2019 and 2018

California Institute of Technology
Index to the Financial Statements
For the Years Ended September 30, 2019 and 2018

Report of Independent Auditors

To the Board of Trustees of the California Institute of Technology

We have audited the accompanying financial statements of the California Institute of Technology (the "Institute"), which comprise the balance sheets as of September 30, 2019 and 2018, and the related statements of activities and of cash flows for the years then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on the financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the Institute's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the California Institute of Technology as of September 30, 2019 and 2018, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

PricewaterhouseCoopers LLP

January 29, 2020

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California Institute of Technology
Balance Sheets
At September 30, 2019 and 2018
(Dollars in Thousands)

	2019	2018
ASSETS		
Cash and cash equivalents (Notes B and D)	$ 6,510	$ 6,174
Accounts and notes receivable, net		
United States government	330,288	337,684
Other	44,558	61,010
Contributions receivable, net	148,314	192,228
Investments	3,426,502	3,494,529
Prepaid expenses and other assets	206,499	181,432
Deferred United States government billings	362,768	316,819
Property, plant, and equipment, net	1,070,767	1,004,120
Total assets	$ 5,596,206	$ 5,593,996
LIABILITIES and NET ASSETS		
Liabilities:		
Accounts payable and accrued expenses	$ 412,728	$ 404,707
Accrued compensation and benefits	269,881	257,302
Deferred revenue and refundable advances	31,836	35,065
Annuities, trust agreements, and agency funds	88,896	91,750
Bonds and notes payable, net	1,176,092	1,241,610
Accumulated postretirement benefit obligation	421,899	357,532
Total liabilities	2,401,332	2,387,966
Net assets:		
Without donor restrictions	486,982	583,369
With donor restrictions:		
Time or purpose	876,456	907,350
Perpetual	1,831,436	1,715,311
Total net assets with donor restrictions	2,707,892	2,622,661
Total net assets	3,194,874	3,206,030
Total liabilities and net assets	$ 5,596,206	$ 5,593,996

The accompanying notes are an integral part of these financial statements.

California Institute of Technology
Statement of Activities
For the Year Ended September 30, 2019
(with summarized financial information for the year ended September 30, 2018)
(Dollars in Thousands)

	Without Donor Restrictions	With Donor Restrictions	2019 Total	2018 Total
Operating revenues:				
Tuition and fees, net of student financial aid	$ 44,379	$ -	$ 44,379	$ 42,602
Endowment spending, distributed	33,764	116,006	149,770	138,637
Gifts and pledges	23,194	49,036	72,230	49,671
Grants and contracts:				
Jet Propulsion Laboratory operations	2,744,953	-	2,744,953	2,664,521
United States government, Campus - direct	183,748	-	183,748	175,807
Other Campus - direct	30,721	6,363	37,084	33,497
Recovery of indirect costs and allowances	141,862	-	141,862	131,814
Sales and services	50,363	-	50,363	46,243
Other	9,741	-	9,741	7,346
Net assets released from restrictions	149,610	(149,610)	-	-
Total operating revenues and other support	3,412,335	21,795	3,434,130	3,290,138
Operating expenses:				
Compensation and benefits	402,900	-	402,900	389,257
Supplies and services	139,783	-	139,783	140,429
Subcontracts	28,352	-	28,352	30,723
Depreciation, accretion, and amortization	74,117	-	74,117	69,173
Utilities	15,780	-	15,780	15,276
Interest	29,628	-	29,628	26,259
Jet Propulsion Laboratory operations	2,744,953	-	2,744,953	2,664,521
Total operating expenses	3,435,513	-	3,435,513	3,335,638
Results of operations	(23,178)	21,795	(1,383)	(45,500)
Non-operating changes:				
Investment return in excess (deficit) of endowment spending	(13,073)	10,431	(2,642)	143,612
Endowment spending, undistributed	3,239	7,158	10,397	11,451
Gifts and pledges	11,454	48,069	59,523	72,686
Changes in fair value of interest rate swap	(27,545)	-	(27,545)	15,419
Non periodic changes in benefit obligations	(23,016)	-	(23,016)	772
Interest expense	(13,037)	-	(13,037)	(20,694)
Redesignations, reclassifications and other	(11,231)	(2,222)	(13,453)	(12,225)
Total non-operating activities	(73,209)	63,436	(9,773)	211,021
(Decrease)/increase in net assets	(96,387)	85,231	(11,156)	165,521
Net assets at beginning of year	583,369	2,622,661	3,206,030	3,040,509
Net assets at end of year	$ 486,982	$ 2,707,892	$ 3,194,874	$ 3,206,030

The accompanying notes are an integral part of these financial statements.

California Institute of Technology
Statement of Activities
For the Year Ended September 30, 2018
(Dollars in Thousands)

	Without Donor Restrictions	With Donor Restrictions	2018 Total
Operating revenues:			
Tuition and fees, net of student financial aid	$ 42,602	$ -	$ 42,602
Endowment spending, distributed	32,982	105,655	138,637
Gifts and pledges	31,996	17,675	49,671
Grants and contracts:			
Jet Propulsion Laboratory operations	2,664,521	-	2,664,521
United States government, Campus - direct	175,807	-	175,807
Other Campus - direct	33,497	-	33,497
Recovery of indirect costs and allowances	131,814	-	131,814
Sales and services	46,243	-	46,243
Other	7,346	-	7,346
Net assets released from restrictions	129,584	(129,584)	-
Total operating revenues and other support	3,296,392	(6,254)	3,290,138
Operating expenses:			
Compensation and benefits	389,257	-	389,257
Supplies and services	140,429	-	140,429
Subcontracts	30,723	-	30,723
Depreciation, accretion, and amortization	69,173	-	69,173
Utilities	15,276	-	15,276
Interest	26,259	-	26,259
Jet Propulsion Laboratory operations	2,664,521	-	2,664,521
Total operating expenses	3,335,638	-	3,335,638
Results of operations	(39,246)	(6,254)	(45,500)
Non-operating changes:			
Investment return in excess of endowment spending	61,395	82,217	143,612
Endowment spending, undistributed	2,468	8,983	11,451
Net assets released from restrictions	801	(801)	-
Gifts and pledges	1,010	71,676	72,686
Changes in fair value of interest rate swap	15,419	-	15,419
Non periodic changes in benefit obligations	772	-	772
Interest expense	(20,694)	-	(20,694)
Redesignations, reclassifications and other	(12,758)	533	(12,225)
Total non-operating activities	48,413	162,608	211,021
Increase in net assets	9,167	156,354	165,521
Net assets, beginning of year	574,202	2,466,307	3,040,509
Net assets, end of year	$ 583,369	$ 2,622,661	$ 3,206,030

The accompanying notes are an integral part of these financial statements.

California Institute of Technology
Statements of Cash Flows
For the Years Ended September 30, 2019 and 2018
(Dollars in Thousands)

	2019	2018
Cash flows from operating activities:		
(Decrease)/increase in net assets	$ (11,156)	$ 165,521
Adjustments to reconcile change in net assets to net cash used in operating activities:		
Depreciation, accretion, and amortization	74,117	69,173
Changes in postemployment benefit obligations	23,016	(772)
Contributions restricted for long-term investment and capital projects	(37,377)	(68,526)
Realized and unrealized gains on investments and swap	(68,590)	(249,557)
Other non-cash items	(11,087)	(4,494)
Changes in assets and liabilities:		
Accounts and notes receivable, net	505	(38,497)
Contributions receivable, net	(13,045)	7,557
Prepaid expenses and other assets	(5,875)	(1,562)
Deferred United States government billings	(45,949)	30,702
Accounts payable and accrued expenses	(14,517)	31,081
Accrued compensation and benefits	12,579	28,816
Deferred revenue, refundable advances, and agency funds	(3,373)	2,178
Accumulated postretirement benefit obligation	41,351	(35,826)
Net cash used in operating activities	(59,401)	(64,206)
Cash flows from investing activities:		
Purchases of investments	(797,922)	(743,515)
Proceeds from sales and maturities of investments	964,447	834,964
Purchases of property, plant, and equipment	(139,386)	(150,973)
Proceeds from sale of property, plant, and equipment	4,905	3,500
Net cash provided by (used in) investing activities	32,044	(56,024)
Cash flows from financing activities:		
Contributions restricted for long-term investment and capital projects	92,941	129,754
Investment return restricted for long-term investment and capital projects	632	606
Cash received under annuity and trust agreements	6,034	3,558
Cash payments made under annuity and trust agreements	(6,204)	(6,637)
Net repayments of short-term debt	(65,710)	(7,480)
Net cash provided by financing activities	27,693	119,801
Net change in cash and cash equivalents	336	(429)
Cash and cash equivalents at beginning of year	6,174	6,603
Cash and cash equivalents at end of year	$ 6,510	$ 6,174

The accompanying notes are an integral part of these financial statements.

A. Description of California Institute of Technology

California Institute of Technology (the "Institute") is a private, not-for-profit institution of higher education based in Pasadena, California. Founded in 1891, the Institute provides education and training services, primarily for students at the undergraduate, graduate, and postdoctoral levels, and performs research, training, and other services under grants, contracts, and similar agreements with sponsoring organizations, primarily departments and agencies of the government of the United States of America.

B. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying financial statements include the accounts of the Institute's main campus and satellite facilities ("Campus"), as well as the Jet Propulsion Laboratory ("JPL"), a Federally Funded Research and Development Center managed by the Institute for the National Aeronautics and Space Administration ("NASA").

The Institute manages JPL under a cost-reimbursable contract with NASA. JPL's land, buildings, and equipment are owned by the United States government and are excluded from the Institute's financial statements. Receivables and liabilities arising from JPL's operations are reflected in the Institute's balance sheets. The direct costs of JPL's operations and the related reimbursement of those costs are reflected separately in the statements of activities.

The Institute's financial statements have been prepared on the accrual basis of accounting, in accordance with accounting principles generally accepted in the United States of America ("GAAP").

Net Assets

Under GAAP, the Institute classifies its resources for reporting purposes in two categories based on the existence or absence of donor-imposed restrictions. Those categories, and descriptions of the types of transactions affecting each category, follow:

- The financial statement line item "net assets without donor restrictions" consists of those net assets not subject to donor-imposed restrictions. Activities that affect this category generally consist of fees for services, research revenues, and related expenses associated with the Institute's operating activities, as well as activities related to funds functioning as endowment and certain philanthropic support. Contributions not subject to donor-imposed restrictions and donor-restricted contributions that are received and either spent, or deemed spent, for the restricted purpose within the same year are reported as increases to net assets without donor restrictions.

  Net assets without donor restrictions include certain funds that are board-designated as functioning as endowment. There are no other board-designated funds.

- The financial statement line item "net assets with donor restrictions" includes both net assets that are subject to donor-imposed time or purpose restrictions that are expected to be met and those subject to donor-imposed perpetual restrictions. Net assets with donor-imposed restrictions that are expected to be met include endowment investment returns that have not yet been appropriated for expenditures, certain funds restricted for capital projects, and certain life income and annuity funds. The Institute meets such donor restrictions through the passage of time, the appropriation of endowment earnings, placing gift-funded capital projects into service, and/or the Institute's incurrence of expenditures or other payments. When such restrictions are met, the related net assets are released to net assets without donor restrictions.

Net assets with donor restrictions that are subject to perpetual restrictions include endowment gifts, related contributions receivable, and certain charitable life income and annuity funds for which donors have stipulated that the original value of their contributions and, if applicable, certain subsequent accumulations, be held in perpetuity.

For additional disclosures of the Institute's net assets, refer to Note H.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents

Cash and cash equivalents include bank account balances, investments in money market funds, and direct short-term investments that have remaining maturities of three months or less when purchased. Bank account balances at September 30, 2019 and 2018 were $6,510 and $6,174, respectively. The Institute classifies all cash and cash equivalents held as part of the investment portfolios as short-term investments. At September 30, 2019 and 2018, short-term investments, as disclosed in Note D, included $347,271 and $188,811, respectively, in cash and cash equivalents. Carrying amounts of cash and cash equivalents approximate fair value due to the relatively short maturities of these instruments.

Accounts and Notes Receivable

Accounts receivable under contracts and grants are carried at cost, less an immaterial allowance for doubtful accounts. Net accounts receivable under contracts and grants totaled $344,834 and $345,253 at September 30, 2019 and 2018, respectively. Activity in the allowance accounts was not significant during the years ended September 30, 2019 and 2018. The carrying value of net accounts receivable approximates fair value.

At September 30, 2019 and 2018, the Institute held aggregate accounts receivable from students and employees of $2,582 and $2,654, respectively, and loans receivable from students of $5,718 and $5,732, respectively. Both accounts and loans receivable are carried at cost, and only minor amounts of these receivables are expected to become uncollectible.

Investments
Investments are carried at fair value as discussed in Note K. Purchases and sales of securities are recorded on trade dates, and realized gains and losses are determined based on the average cost of securities sold. Accounts receivable included $21,712 and $45,055 related to outstanding sales and accounts payable included $602 and $2,148 related to outstanding purchases of investments at September 30, 2019 and 2018, respectively.

Short-term investments included $46,109 and $18,219 held by the counterparty to the Institute's interest rate swap at September 30, 2019 and 2018, respectively, as collateral in accordance with the terms of the swap agreement.

The Institute also directly transacts in options to manage equity and foreign exchange risks of certain investments. The fair value of options is included in investments in the balance sheets and is classified as derivatives in disclosures of investments. Changes in the fair value of options are reported in investment return (loss). The Institute does not designate any of these derivative instruments as hedging instruments under GAAP. Further disclosure of the fair value of derivatives is reported in Note K.

Property, Plant, and Equipment
Property, plant, and equipment is recorded at the cost of construction, acquisition, or fair value of contributed assets at the date of gift. Interest costs related to debt used for construction of assets are capitalized and included in the cost of construction. Depreciation on all assets subject to depreciation is calculated over the estimated useful lives as defined for each class of depreciable asset, which range from three to fifty years, using the straight-line method. Depreciation on buildings and building improvements is calculated based on the useful lives of each major building component. The Institute provides for the renewal and replacement of assets from various sources set aside for this purpose.

The Institute routinely acquires or constructs equipment under federally and non-federally funded research awards. The costs of such assets for which title does not ultimately transfer to the Institute are charged to expense.

The Institute's conditional asset retirement obligations are primarily related to removal and disposal of asbestos and removal of buildings and improvements from leased property. Asset retirement cost, net of accumulated depreciation, was $11,042 and $11,490 at September 30, 2019 and 2018, respectively, and is included in property, plant, and equipment in the balance sheets. Conditional asset retirement obligations were $26,664 and $26,176 at September 30, 2019 and 2018, respectively, and are included in accounts payable and accrued expenses in the balance sheets.

Annuities, Trust Agreements, and Agency Funds
The Institute's split-interest agreements with donors consist primarily of charitable gift annuities and charitable remainder trusts for which the Institute serves as trustee. For irrevocable agreements, assets contributed are included in investments at fair value and totaled $114,188 and $114,170 at September 30, 2019 and 2018, respectively. Contribution revenue is recognized at the date each trust is established after recording liabilities for the actuarially-determined present value of the estimated future payments to be made to beneficiaries. Actuarial liabilities are discounted at an appropriate credit risk-adjusted rate determined at the inception of each agreement. Discount rates on split-interest agreements range from 1.2% to 10.6% per annum. The liabilities are adjusted during the

terms of the agreements for changes in the fair value of the assets, accretion of discounts, and other changes in the estimates of future benefits. The 2012 Individual Annuity Reserving (IAR) table was used for the years ended September 30, 2019 and 2018. Split-interest agreement liabilities totaled $66,305 and $67,108 at September 30, 2019 and 2018, respectively, and are included in liabilities for annuities, trust agreements, and agency funds in the balance sheets and classified in Level 3 of the valuation hierarchy described in Note K.

The Institute is also the trustee for certain revocable agreements. Assets contributed are included in Institute investments at fair value, and amounts equal to the value of assets are included in liabilities for annuities, trust agreements, and agency funds in the balance sheets. Total assets and liabilities for revocable agreements were $6,680 and $8,587 at September 30, 2019 and 2018, respectively.

The Institute held assets totaling $15,911 and $16,055 in agency funds on behalf of other entities at September 30, 2019 and 2018, respectively. The assets held are primarily included in investments in the balance sheets. The corresponding liability, which is equal to assets held, is included in annuities, trust agreements, and agency funds in the balance sheets.

Beneficial Interests
The Institute is the beneficiary of both charitable remainder and perpetual trusts held and administered by others and interests in certain estates bequeathed by donors. The fair value of the Institute's interests in charitable and perpetual trusts is estimated by multiplying the Institute's percentage interest by the fair value of trust assets at the time that receipt of such interests is both probable and reasonably estimable. The value of the Institute's interests in such trusts is adjusted for changes in the fair values of the underlying assets. Distributions from perpetual trusts are recorded as revenue when contributed by the trustee. Interests in estates are recognized based on estimates of cash flows from estate settlements at the time such cash flows are probable and reasonably estimable. Beneficial interests totaled $29,639 and $32,114 at September 30, 2019 and 2018, respectively, and are included in prepaid expenses and other assets in the balance sheets.

Compensated Absences
Institute employees are entitled to paid vacation based upon length of service and other factors. Certain employees also accrue benefits related to sick leave. The Institute records a liability for these benefits that employees have earned but not yet taken. At September 30, 2019 and 2018, accrued compensated absences of $99,230 and $94,122, respectively, are included in accrued compensation and benefits in the balance sheets. Other compensated absences do not accumulate and are treated as current-period costs.

Workers' Compensation Insurance
The Institute provides workers' compensation insurance to its employees. Liabilities for the Institute's retained risk related to such coverage are determined by an actuary and are included in accrued compensation and benefits in the balance sheets. At September 30, 2019 and 2018, the liabilities for workers' compensation were $12,446 and $11,527, respectively.

Accounting Pronouncements Adopted
Effective at the beginning of the fiscal year ended September 30, 2019, the Institute adopted Accounting Standards Update "ASU" 2014-09, *Revenue from Contracts with Customers,* and all subsequent amendments to the ASU (collectively, "ASC 606"). ASC 606 creates a single framework

(Dollars in Thousands)

for recognizing revenue from contracts with customers that fall within its scope. The Institute adopted ASC 606 using the modified retrospective method applied to all contracts not completed as of October 1, 2018. The adoption of ASC 606 had no material effect on the Institute's total revenues. The impact of the adoption of ASC 606 and accompanying financial statement classification adjustments for the year ended September 30, 2019, is as follows:

	Legacy GAAP	ASC 606 Adjustments	Other Reporting Reclassifications	As Reported
Without Donor Restrictions:				
Operating revenues:				
Tuition and fees, net	$ 43,173	$ 13,529	$ (12,323)	$ 44,379
Auxiliary enterprises	34,040	(14,788)	(19,252)	-
Sales and services	-	-	50,363	50,363
Other	40,852	-	(31,111)	9,741
Total operating revenues and other support	3,425,917	(1,259)	(12,323)	3,412,335
Operating expenses:				
Compensation and benefits	394,097	(1,259)	10,062	402,900
Graduate fellowships	22,385	-	(22,385)	-
Total operating expenses	3,449,095	(1,259)	(12,323)	3,435,513

The Institute's implementation of ASC 606 resulted in the reclassification of $14,788 in undergraduate room and board revenue from auxiliary enterprises to tuition and fees, net, in order to display student revenue net of all applicable financial aid and any other discounts.

The Institute also changed the presentation of other Statement of Activities line items in order to enhance the usefulness of the financial statements. Such changes included replacing the "Auxiliary enterprises" revenue line item with "Sales and services," which includes all revenue subject to ASC 606, and related reclassifications. The Institute also changed its method of presentation of certain recoveries of graduate tuition remission and graduate fellowships, resulting in $12,323 decreases in both tuition and graduate fellowships expense. Revenue line items and their components are discussed in further detail later in note B under the header "Revenue recognition."

(Dollars in Thousands)

The Institute reclassified certain prior-year amounts on the Statement of Activities for the year ended September 30, 2018 in order to conform to the current-year presentation and to enhance the usefulness of the financial statements. Those reclassifications were as follows:

	Originally Reported	Reclassifications	As Reported
Without Donor Restrictions:			
Operating revenues:			
Tuition and fees, net	$ 42,152	$ 450	$ 42,602
Auxiliary enterprises	30,487	(30,487)	-
Sales and services	-	46,243	46,243
Other	36,468	(29,122)	7,346
Total operating revenues and other support	3,309,308	(12,916)	3,296,392
Operating expenses:			
Compensation and benefits	380,976	8,281	389,257
Graduate fellowships	21,197	(21,197)	-
Total operating expenses	3,348,554	(12,916)	3,335,638

Effective at the beginning of the year ended September 30, 2019, the Institute also adopted ASU 2018-8, *Not-for-Profit Entities – Clarifying the Scope and Accounting Guidance for Contributions Received and Contributions Made (Topic 958)* on a modified prospective basis. The standard assists not-for-profit entities in evaluating whether transactions should be accounted for as contributions or as contracts with customers and provides additional guidance about how to determine whether a contribution is conditional. The adoption of this standard resulted in the recognition of $24,298 in gifts and pledges with donor restrictions and $6,363 in sponsored research revenue with donor restrictions during the year ended September 30, 2019 that would have been considered conditional (and therefore unrecognized) under previous accounting standards.

Revenue Recognition

The Institute's revenue recognition policies are as follows:

- *Investment return (loss)* - Investment transactions are recorded on the trade date. Investment income and realized and unrealized gains and losses, net of investment fees, are reported as increases or decreases to the appropriate net asset category.

- *Gifts* - Unconditional contributions, including promises to give, are recorded as revenues in the year received. Noncash gifts are recorded at fair value using quoted market prices, market prices for similar assets, independent appraisals, or as estimated by Institute management. Gift revenue from contributions to be collected in the form of securities or other investments is adjusted at each year end to reflect the year-end value of securities and/or investments to be contributed.

  Effective with the Institute’s adoption of ASU 2018-8 effective October 1, 2018, conditional contributions, which are characterized by both the presence of one or more donor-imposed barriers to the Institute’s entitlement to promised resources and the donor’s right of return of funds or the right to be released of obligations to transfer assets in the future, are recorded when the Institute overcomes such barriers. Barriers may include performance-related stipulations, limitations on the Institute's discretion over the use of awarded funds, and/or other stipulations related to the purpose of the contribution. The consideration of these barriers supersedes the prior practice of considering future and uncertain events in determining donor-imposed conditions. Conditional contributions, undiscounted, totaled $67,394 and $70,890, and advance payments on such contributions totaled $4,250 and $10,038, at September 30, 2019 and 2018, respectively. Advance payments are recorded in deferred revenues.

- *Grants and Contracts, Campus* – Effective with the Institute's adoption of ASU 2018-8 on October 1, 2018, revenues from grants and cooperative agreements designated for research generally are accounted for as contributions due to the lack of a commercial objective on the part of the sponsor. Such contributions generally are considered conditional due to the inclusion of barriers requiring adherence to specific costing principles and return-of-funds provisions. Generally, barriers to entitlement are removed, and revenue recognized, as allowable expenditures are incurred under such agreements. Cash and other assets received in excess of such expenditures or otherwise subject to conditions are recorded as deferred revenue. Conditional contributions related to sponsored research, undiscounted, totaled $224,225 and $166,650 at September 30, 2019 and 2018, respectively, and are not recorded in the financial statements. The Institute includes in conditional contributions only the unexpended portions of sponsored awards that the Institute has the right to expend without further action from the sponsor and/or a funding agency. Advance payments related to sponsored research totaled $10,156 and $9,640 at September 30, 2019 and 2018, respectively.

- *Recovery of indirect costs and allowances* – Substantially all Campus United States government grants and contracts provide for the reimbursement of indirect facilities and administrative costs and the recovery of graduate student tuition remission based on rates negotiated with the Office of Naval Research, the Campus' federal cognizant agency for negotiation and approval of such rates. Such reimbursements generally are recognized as related direct costs are incurred on applicable awards. Recoveries of such facilities and administrative costs were $90,974 and $88,721 for the years ended September 30, 2019 and 2018, respectively.

- *Other* – Rental revenues from leased properties and miscellaneous gains and losses are recognized as earned. See Note L for additional information on leases.

Recognition of revenue from contracts with customers occurs as the Institute satisfies one or more performance obligations, which are promises in a contract to transfer a distinct good or service to a customer. The timing of billings, cash collections, and revenue recognition may result in contract assets and contract liabilities (deferred revenues) in the balance sheets. A description of the Institute's revenues from contracts with customers and contract assets and liabilities follows:

- *Tuition and fees* – All student tuition and fees and undergraduate room and board charges are recorded, net of applicable financial aid, as revenues during the year the related academic or other services are rendered. Tuition, fees, room, and board charges totaled $127,613 and $121,196 and financial aid totaled $83,234 and $78,594 for the years ended September 30, 2019 and 2018, respectively.

Payments received in advance of academic terms are recorded as deferred revenue. Deferred revenue related to tuition, fees, room, and board was $10,669 and $10,099 and accounts receivable related to tuition, fees, room, and board was $1,779 and $1,765 at September 30, 2019 and 2018, respectively. Substantially all deferred revenue balances at September 30, 2018 were recognized as revenue during the fiscal year ended September 30, 2019, as performance obligations to provide instruction, room, and board were satisfied.

- *Jet Propulsion Laboratory operations* - The Institute's performance obligations under its cost-reimbursable contract with NASA for JPL (the "JPL Contract") are contained within separately identifiable, individually NASA-approved task orders created under the JPL Contract. The task order is NASA's stipulated method of planning, funding, and monitoring costs under the JPL Contract. The various task orders specify distinct scientific, engineering, and support functions, from which NASA benefits directly or in combination with other work performed under the JPL Contract.

  The Institute satisfies its performance obligations under the JPL Contract on an over-time basis, as it incurs allowable direct costs under authorized, funded task orders, and therefore recognizes revenue as such costs are incurred. All goods and services furnished under the JPL Contract, which are measured by allowable costs incurred, immediately accrue to the benefit of NASA: NASA simultaneously receives and consumes the benefits of any services provided, obtains title to any assets purchased, and, by contract, prohibits the Institute from directing any alternative use of assets created under the JPL Contract.

  The Institute has a right to immediate reimbursement from NASA when allowable incurred costs are paid. The Institute collects its reimbursements under the JPL Contract through a letter of credit arrangement. JPL accounts receivable totaled $305,060 and $317,664, at September 30, 2019 and 2018, respectively.

  The Institute records contract assets equal to costs incurred under, but not yet billed to, the JPL Contract. Such costs are not billable to NASA until paid. These contract assets are recorded as deferred United States government billings and are described further in Note E. There are no deferred revenue or other contract liability balances related to JPL.

  Under the JPL Contract, the Institute also receives an annual negotiated reimbursement in lieu of indirect costs ("lump sum") and an annual fixed performance fee, which totaled $50,888 and $43,093 for the years ended September 30, 2019 and 2018, respectively. These recoveries are recorded on an over-time basis ratably over each fiscal year and are included in recovery of indirect costs and allowances in the statements of activities. The JPL Contract has no material variable consideration and no significant financing component.

  The current JPL Contract began October 1, 2018, and has a five-year term. At September 30, 2019, reimbursements of all costs under the contract over the five-year term were subject to an aggregate total of fifteen billion dollars. The Institute may be awarded up to five additional years under the contract based upon annual NASA evaluations of its performance. No such evaluations have yet taken place.

The value of the Institute's future performance obligations under the JPL Contract is subject to change according to NASA's priorities and the results of JPL's scientific and engineering initiatives. Such performance obligations are subject to the availability of future NASA funding and, in certain cases, the future renewal or extension of the JPL Contract. Based upon the JPL Contract's maximum cost limit at September 30, 2019, the maximum remaining obligation to potentially be authorized under the JPL Contract was $12,280,006 at September 30, 2019.

- *Sales and services* - Ancillary inflows from graduate housing, royalties, non-degree-granting educational activities, retail operations, and other agreements with customers are recorded as the Institute satisfies the related performance obligations. Generally, payment is due at the time goods or services are provided. There were no material deferred revenue or accounts receivable balances related to sales and services revenues at September 30, 2019 and 2018.

Campus recorded $29,115 in direct revenues from sponsored research activities accounted for as contracts with customers for the year ended September 30, 2019. Those direct revenues are combined with conditional contribution revenues from either United States government or other Campus grants in the statements of activities. Related recoveries according to applicable indirect cost rates are included in recovery of indirect costs and allowances in the statements of activities. There were no material deferred revenue or accounts receivable balances related to these contracts at September 30, 2019 and 2018.

During the year ended September 30, 2019, the Institute received two commitments totaling $750,000 from entities related to a member of the Institute's governing board to support research in several scientific areas, to fund construction of related research facilities, and to fund an endowment. Payments toward the commitments are expected to be collected over the next eleven years. Revenue associated with these commitments will be recorded as they qualify for recognition. No revenue was recognized during the year ended September 30, 2019. Subsequent to September 30, 2019, the Institute received a cash payment of $25,000 toward one of the commitments above.

(Dollars in Thousands)

Expenses

Campus expenses are reported in the statements of activities by natural classification. Institute expenses by functional classification were as follows for the years ended September 30, 2019 and 2018:

	Campus Program Activities					
September 30, 2019	**Instruction and Academic Support**	**Organized Research**	**Auxiliary Enterprises**	**Institutional Support**	**JPL Operations**	**Total**
Operating expenses:						
Compensation and benefits	$ 197,812	$ 133,570	$ 12,036	$ 59,482	$ 1,254,409	$ 1,657,309
Supplies and services	60,315	43,790	13,514	22,164	389,356	529,139
Subcontracts	1,686	26,666	-	-	1,089,198	1,117,550
Depreciation and amortization	28,992	33,465	8,014	3,646	-	74,117
Utilities	6,383	7,877	563	957	11,990	27,770
Interest	11,283	12,615	5,025	705	-	29,628
Total functional expenses	$ 306,471	$ 257,983	$ 39,152	$ 86,954	$ 2,744,953	$ 3,435,513
Non-operating expenses:						
Interest				$ 13,037		$ 13,037

	Campus Program Activities					
September 30, 2018	**Instruction and Academic Support**	**Organized Research**	**Auxiliary Enterprises**	**Institutional Support**	**JPL Operations**	**Total**
Operating expenses:						
Compensation and benefits	$ 187,244	$ 129,650	$ 11,422	$ 60,941	$ 1,127,756	$ 1,517,013
Supplies and services	59,350	49,203	15,090	16,786	409,322	549,751
Subcontracts	712	30,011	-	-	1,115,076	1,145,799
Depreciation and amortization	25,068	34,515	5,689	3,901	-	69,173
Utilities	6,091	7,971	639	575	12,367	27,643
Interest	8,299	9,704	7,600	656	-	26,259
Total functional expenses	$ 286,764	$ 261,054	$ 40,440	$ 82,859	$ 2,664,521	$ 3,335,638
Non-operating expenses:						
Interest				$ 20,694		$ 20,694

Institutional Support expenses include certain costs related to the administration of the Institute's contract with NASA for the operation of JPL. NASA reimbursed Caltech $19,888 and $22,093, for the years ended September 30, 2019 and 2018, respectively, related to such costs. These amounts represent the annual negotiated reimbursement in lieu of indirect costs ("lump sum") as described in the NASA Contract.

Auxiliary Enterprises expenses include the costs associated with revenue-generating supporting services, including undergraduate room and board, graduate and faculty housing, retail stores, and dining facilities.

Facilities operation and maintenance costs incurred centrally are allocated back to the functional expense classifications as follows: Depreciation related to buildings and improvements and other central facilities' operating costs are allocated based on square footage occupancy of Institute facilities, equipment depreciation is allocated based on average equipment purchases attributed to each classification, and interest expense on external debt, net of amounts capitalized, is allocated to categories that benefit from the proceeds of such debt based on occupancy.

Operating and Non-operating Activities
The statements of activities report the changes in net assets from the Institute's operating and non-operating activities. Operating activities exclude investment returns/losses in excess/deficit of endowment spending, endowment spending available but not distributed to operations, revenues and releases from restrictions related to gifts for construction, endowments, and annuity and trust agreements, changes in postemployment benefit obligations that are not otherwise recognized in net periodic benefit cost, changes in fair value of interest rate swaps, interest expense related to any bonds issued for which the proceeds have not yet been used for capital projects, to refund other bonds or for operating purposes, net gains or losses on nonrecurring transactions, actuarial adjustments related to annuity and trust agreements, losses on retirement of indebtedness, and donor redesignations or other reclassifications of net assets.

Tax Status
The Institute is generally exempt from federal taxes on income related to its charitable purpose under the provisions of IRC Section 501(c)(3) and from California and other state income taxes under corresponding state laws. The Institute is subject to both federal and state income taxes on income from certain activities not substantially related to its exempt purpose. At September 30, 2019 and 2018, the Institute maintained a full valuation allowance on its deferred tax assets, which are primarily due to tax losses from certain investment activities. Based on its analysis of the uncertainties surrounding both the timing and amounts of potential future net taxable income, the Institute has assumed that it is more likely than not that the Institute will not realize the deferred tax assets. The Institute has not provided for any uncertain tax positions at September 30, 2019 and 2018.

The Federal Tax Cuts and Jobs Act ("TCJA") was signed into law in December 2017. The TCJA includes several provisions that may impact the Institute, including an excise tax on net investment income and revised methods for calculating unrelated business income. Based on its understanding of the TCJA and available guidance, the Institute had no material deferred tax liabilities or income taxes payable at September 30, 2019.

Related Party Transactions
Members of the Institute's Board of Trustees and senior management may, from time to time, be associated, either directly or indirectly, with entities doing business with the Institute. These transactions are conducted in the normal course of business and in accordance with the Institute's policies and procedures governing potential conflicts of interest.

New Accounting Pronouncements
In February 2016, FASB issued ASU 2016-02 regarding accounting for leases. ASU 2016-02 requires recognition of rights and obligations arising from lease contracts as assets and liabilities on the balance sheets. ASU 2016-02 is effective for the Institute's fiscal year ending September 30, 2020. The Institute does not expect the adoption of this standard to result in material changes to its financial statements or disclosures.

In August 2016, FASB issued ASU 2016-15 regarding the classification of certain transactions within the statement of cash flows. ASU 2016-15 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

In November 2016, FASB issued ASU 2016-18 regarding the presentation of restricted cash in the statement of cash flows. ASU 2016-18 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

In March 2017, FASB issued ASU 2017-07. The standard requires bifurcation of net periodic cost related to postretirement benefits into service cost, which must be included in operations, and other components, which must be reported outside of operations. ASU 2017-07 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

In August 2018, FASB issued ASU 2018-13 regarding certain changes to the disclosure requirements for fair value measurements. ASU 2018-13 is effective for the Institute's fiscal year ending September 30, 2021. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

C. Contributions Receivable, net

Contributions receivable consists of unconditional promises to give to the Institute in the future. Individual contributions receivable are initially recorded at fair value, including discounts to present values of the future cash flows at appropriate credit risk-adjusted rates, and are classified in Level 3 of the valuation hierarchy described in Note K. Discount rates on outstanding contributions receivable at September 30, 2019 and 2018 range from 0.74% to 4.56%.

(Dollars in Thousands)

Collections of contributions receivable were expected as follows at September 30, 2019 and 2018:

	2019	2018
Within one year	$ 37,013	$ 69,740
Between one year and five years	98,258	98,656
More than five years	20,213	31,853
Gross contributions receivable	155,484	200,249
Less:		
Unamortized discounts	7,028	7,911
Allowance for uncollectible contributions	142	110
Net contributions receivable	$ 148,314	$ 192,228

Net contributions receivable carried the following donor-imposed restrictions at September 30, 2019 and 2018:

	2019	2018
Endowment	$ 73,403	$ 129,566
Other purpose and/or time restrictions	74,911	62,662
Net contributions receivable	$ 148,314	$ 192,228

At September 30, 2019 and 2018, net promises totaling $106,029 and $125,793, respectively, were due from board members, their estates, and charitable entities founded by board members.

(Dollars in Thousands)

D. Investments

Investments consisted of the following at September 30, 2019 and 2018:

	2019	2018
Short-term investments	$ 348,320	$ 188,811
Fixed-income securities	119,746	162,116
Equity securities	1,216,463	1,365,675
Alternative investments:		
Alternative securities	827,156	918,528
Private equity	528,937	444,369
Real assets	379,139	411,560
Derivatives, net	6,741	3,470
Total investments	$ 3,426,502	$ 3,494,529

The Institute engages a number of outside investment managers to manage portions of its investment portfolios, which include an investment pool and other separately managed portfolios.

Below is a description of the holdings included within each investment classification:

- *Short-term investments* consist primarily of cash and cash equivalents invested in prime, U.S. government, and government agency money-market funds, as well as deposits with financial institutions.

- *Fixed-income securities* consist primarily of debt instruments issued by corporate or sovereign entities in both U.S. and foreign markets and investments in funds that hold such instruments.

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- *Equity securities* consist primarily of investments in publicly traded corporate equities in globally diversified public markets including domestic, developed international, emerging markets and investments in funds that hold such investments. Investment managers invest according to each manager's particular investment strategy.

- *Alternative securities* consist primarily of investments in funds other than private equity and real assets in which redemption options and/or distributions are determined by the respective investment managers. Alternative securities managers pursue returns through a variety of strategies, such as high yield and distressed credit, long/short equity, event-driven, and relative value. Managers invest and trade in various securities and financial instruments, including publicly traded and privately issued common and preferred shares of domestic and foreign companies, corporate debt, bonds, swaps, options, futures contracts and commodities.

(Dollars in Thousands)

- *Private equity* consists of investments in limited partnership interests that invest primarily in the securities of privately held companies. Investment managers utilize leveraged buyout and venture capital strategies in a wide variety of industries and company sizes. Distributions from these investments are made either in-kind as distributions of publicly tradeable equity securities after initial public offerings, or in cash after liquidation of the underlying securities by the investment manager.

- *Real assets* consist primarily of investments in limited partnerships that invest in foreign and/or domestic real estate and/or energy sectors and/or domestic timber industries. Real estate consists primarily of illiquid investments in residential and commercial real estate assets, projects or land, and notes receivable secured by real estate. Such holdings are either held directly or in partnership funds. Energy holdings consist primarily of illiquid investments in oil and gas exploration and production or materials mining businesses, as well as related oil and gas services businesses, held in limited partnerships. Timber holdings consist primarily of illiquid investments in timber land and harvesting businesses held in limited partnerships.

- *Derivatives, net* consist of options and futures in which the Institute directly transacts to manage equity and foreign exchange risks of certain investments.

Investments were held as follows at September 30, 2019 and 2018:

	2019	**2018**
Investment pool	$ 2,970,917	$ 2,885,142
Separately invested endowments	30,610	41,174
Trusts, annuities, and other	424,975	568,213
Total investments	$ 3,426,502	$ 3,494,529

At September 30, 2019 and 2018, endowment investments were $2,987,001 and $2,907,002, respectively. At September 30, 2019, and 2018, other investments included $9,282 and $7,120, respectively, held in separately invested accounts as required by donors and/or sponsors.

Investment return, which consists of interest and dividend income and net realized and unrealized gains and losses, net of fees, was $157,525 and $293,700 for the years ended September 30, 2019 and 2018, respectively.

E. Deferred United States Government Billings

The Institute's contract with NASA provides for the reimbursement of certain employee benefit costs incurred but not yet billed to the JPL contract. Therefore, the Institute has recorded deferred United States government billings related to the unfunded postretirement benefit obligation, accrued vacation, and workers' compensation liabilities attributable to JPL, as the Institute is able to recover these amounts through future charges to JPL contracts. Although these deferred billing amounts may not be currently funded, and therefore may need to be funded as part of future NASA budgets, the

(Dollars in Thousands)

Institute has the contractual right to require that such funding be made available at the time these employee benefit liabilities become payable by the Institute.

Deferred United States government billings related to deferred reimbursements of the following liabilities at September 30, 2019 and 2018:

	2019	2018
Unfunded postretirement benefit obligation	$ 277,522	$ 236,293
Accrued vacation	81,322	76,610
Accrued worker's compensation expense	3,924	3,916
Total deferred United States government billings	$ 362,768	$ 316,819

F. Property, Plant, and Equipment, net

Property, plant, and equipment consisted of the following at September 30, 2019 and 2018:

	2019	2018
Land and land improvements	$ 73,256	$ 70,719
Buildings and building improvements	1,271,906	1,155,408
Equipment	600,825	577,410
Construction in progress	193,459	205,337
Less: accumulated depreciation	(1,068,679)	(1,004,754)
Total property, plant, and equipment, net	$ 1,070,767	$ 1,004,120

Depreciation expense for the years ended September 30, 2019 and 2018 was $72,805 and $67,866, respectively.

(Dollars in Thousands)

G. Bonds and Notes Payable

Bonds and notes payable are uncollateralized, general obligations of the Institute and consisted of the following at September 30, 2019 and 2018:

	Maximum	Maturity	Interest rate 2019 / 2018	Outstanding 2019	Outstanding 2018
Bonds payable:					
Taxable bonds:					
Series 2016		2116	4.28%	$ 150,000	$ 150,000
Series 2015		2045	4.32%	400,000	400,000
Series 2011		2111	4.70%	350,000	350,000
California Educational Facilities Authority (CEFA) tax-exempt revenue bonds, with variable rates (prior to being synthetically fixed through swap agreements, where applicable):					
2006 Series A		2036	1.33% / 1.31%	82,500	82,500
2006 Series B		2036	1.34% / 1.22%	82,500	82,500
Series 1994		2024	1.34% / 1.22%	30,000	30,000
Total bonds payable, gross				1,095,000	1,095,000
Unamortized original issue premiums/discounts and issuance costs, net				(10,551)	(10,743)
Total bonds payable, net				1,084,449	1,084,257
Notes payable:					
Variable rate facilities:					
General working capital and capital projects:					
JPMorgan Chase revolving bank credit facility	$ 100,000	2022	2.17% / 2.52%	20,000	64,000
U.S. Bank revolving bank credit facility	100,000	2020	2.56% / 2.75%	25,800	75,400
U.S. Bank revolving bank credit facility	50,000	2020	-	-	-
Wells Fargo revolving bank credit facility	50,000	2020	2.37% / 2.61%	45,843	17,953
Bank of New York Mellon money market loan program	50,000	None	-	-	-
Supplemental liquidity for variable rate debt:					
Northern Trust revolving bank credit facility	50,000	2021	-	-	-
Northern Trust revolving bank credit facility	50,000	2019	-	-	-
TD Bank revolving bank credit facility	50,000	2022	-	-	-
Total notes payable				91,643	157,353
Total bonds and notes payable, net				$1,176,092	$1,241,610

(Dollars in Thousands)

As of September 30, 2019, the Institute had eight unsecured revolving lines of credit available (collectively, the "Lines of Credit"), consisting of seven unsecured revolving bank credit facilities and one unsecured revolving money market loan program. At September 30, 2019 and 2018, the Institute had internally-mandated aggregate borrowing limits for the Lines of Credit as follows: $100,000 for borrowings to finance working capital, $100,000 for borrowings to finance acquisitions of real estate and temporary funding for capital projects, and $200,000 for borrowings secured to preserve liquidity.

The $50,000 line of credit from Bank of New York Mellon and the $50,000 line of credit from US Bank are uncommitted. Maturity dates for individual advances made under these lines of credit are determined at the time advances are made.

A Wells Fargo revolving bank credit facility for supplemental liquidity with a permitted maximum draw of $50,000 was terminated effective July 31, 2019. There was no outstanding balance at September 30, 2018.

Subsequent to September 30, 2019, the Institute extended its $50,000 revolving credit facility with Northern Trust originally maturing in 2019 to mature in 2020, and extended its $50,000 revolving credit facility with Northern Trust originally maturing in 2021 to mature in 2022.

The Institute is required to comply with financial covenants in certain line of credit agreements, including maintaining minimum ratios of unrestricted cash and investments to total adjusted debt outstanding. As of September 30, 2019, the Institute was in compliance with all of its required financial covenants.

Under certain circumstances, the CEFA Series 1994, 2006 Series A, and 2006 Series B variable rate revenue bonds, which have contractual maturities commencing in 2024, could fail to be remarketed, requiring the Institute to repurchase the outstanding bonds totaling approximately $195,000. Therefore, those bonds have been classified as repayable in the year ending September 30, 2020 in the following table.

Future principal repayments on bonds and notes payable were as follows at September 30, 2019:

Year Ending September 30	Amount
2020	$ 286,643
2021	-
2022	-
2023	-
2024	-
Thereafter	900,000
Total	$ 1,186,643

The Institute uses an interest rate swap to manage the interest rate exposure of the 2006 Series A and B variable rate revenue bonds. Under the terms of the agreement, which expires October 1, 2036, the

(Dollars in Thousands)

Institute pays the counterparty a fixed interest rate of 3.549% and receives a variable rate, equal to 67% of one-month LIBOR (resulting in a rate of 1.35% at September 30, 2019), on a $165,000 underlying notional principal amount.

The interest rate swap is recorded at fair value, which is the estimated amount that the Institute would receive or pay to terminate the agreement, taking into account current interest rates. The fair value of the swap was a liability of $62,530 and $34,986 at September 30, 2019 and 2018, respectively, and is included in accounts payable and accrued expenses in the balance sheets. Costs of regular settlements with the counterparty of $3,202 and $3,880 during the years ended September 30, 2019 and 2018, respectively, are included in interest expense in the statements of activities. Changes in the swap's fair value during the years ended September 30, 2019 and 2018 resulted in unrealized losses of $27,544 and unrealized gains of $15,419, respectively, which are included in non-operating changes in net assets in the statements of activities.

On November 25, 2019, the Institute issued $500,000 in taxable term bonds at an effective interest rate of 3.659% (including discount amortization), due on September 1, 2119, which yielded net proceeds of approximately $494,000. The bonds are an unsecured general obligation of the Institute.

H. Net Assets

Net Assets with Donor Restrictions

The Institute's net assets with donor restrictions were held as follows at September 30, 2019 and 2018:

	2019	2018
Time or purpose:		
Endowment	$ 637,888	$ 704,413
Contributions receivable	74,910	62,662
Education and research funds	134,121	108,902
Life income and annuity funds	29,537	31,373
Total net assets with time or purpose restrictions	$ 876,456	$ 907,350
Perpetual:		
Endowment	$ 1,693,783	$ 1,523,107
Contributions receivable	73,404	129,566
Life income and annuity funds	45,221	44,065
Student loan funds	19,028	18,573
Total net assets with perpetual restrictions	$ 1,831,436	$ 1,715,311
Total net assets with donor restrictions	$ 2,707,892	$ 2,622,661

Endowment Net Assets

Endowment net assets constitute the largest component of the Institute's net assets and are comprised of more than 1,000 donor-restricted and board-designated funds held primarily for long-term investment that supports educational, research, and general operating activities of the Institute. All endowment assets are held in a consolidated investment pool unless special considerations or donor stipulations require that they be invested separately. Gift annuities, beneficial interests, contributions receivable, and unexpended endowment distributions are not considered endowment net assets.

Pursuant to its interpretation of the Uniform Prudent Management of Institutional Funds Act ("UPMIFA") as enacted in California, the Institute classifies the following as net assets with donor restrictions that are perpetual in nature: the original value of initial gifts to permanent endowments, the original value of subsequent gifts to permanent endowments, and the value of accumulations to permanent endowments made in accordance with the applicable donor gift instrument at the time the accumulation is added to the fund. The remaining portions of donor-restricted endowment funds that are not subject to donor restrictions that are perpetual in nature, which consist primarily of accumulated investment return, are considered donor-restricted as to purpose until those amounts are appropriated for expenditure by the Institute in a manner consistent with the standard of prudence prescribed by UPMIFA and Institute policies and are expended accordingly.

The Institute's endowment spending policy includes a Board of Trustees-approved endowment spending formula that takes into consideration the prior year's allowed formulaic spending, inflation factors, and endowment growth. In accordance with UPMIFA, the policy also includes the following factors for consideration by the Board of Trustees when determining the annual amount to be made available for distribution to the operating budget each year:

- The purposes of donor-restricted endowment funds
- The duration and preservation of such funds
- General economic conditions
- Possible effects of inflation and deflation
- The expected total return from investment income and the appreciation of investments
- Other resources of the Institute
- The investment policies of the Institute

Any excess of endowment spending over current-year investment income and gains/(losses) is funded by prior years' accumulated investment return. The Institute appropriates endowment funds for expenditures based on authorized spending rates and, if applicable, the incurrence of specific expenditures in accordance with donor-imposed purpose restrictions.

The Institute invests endowment assets targeted to earn an average annual total return that exceeds inflation by at least the amount required to support the endowment spending. Total return includes both capital appreciation/depreciation (realized and unrealized gains/losses) and investment income (including interest, dividends, and royalties). The Institute targets a diversified asset allocation, including, but not limited to, investments in public markets, private equity, real assets, and alternative investments, within risk constraints deemed to be prudent.

The portion of endowment available for spending that is transferred to operating accounts each year is shown as endowment spending distributed in the statements of activities. Any endowment spending available for expenditure but not distributed remains invested in the Institute's endowment and is included in non-operating changes to net assets in the statements of activities.

(Dollars in Thousands)

Endowment net assets consisted of the following at September 30, 2019 and 2018:

September 30, 2019	**Without Donor Restrictions**	**With Donor Restrictions**	**Total**
Donor-restricted endowment funds	$ -	$ 2,329,077	$ 2,329,077
Board-designated endowment funds	654,989	2,594	657,583
Total endowment net assets	$ 654,989	$ 2,331,671	$ 2,986,660
September 30, 2018			
Donor-restricted endowment funds	$ -	$ 2,219,926	$ 2,219,926
Board-designated endowment funds	678,678	7,594	686,272
Total endowment net assets	$ 678,678	$ 2,227,520	$ 2,906,198

Changes in endowment net assets for the years ended September 30, 2019 and 2018 were as follows:

	Without Donor Restrictions	**With Donor Restrictions**	**Total**
October 1, 2017	$ 636,457	$ 2,001,719	$ 2,638,176
Investment return, net	60,937	196,433	257,370
Contributions and pledge payments	-	133,761	133,761
Additions to board-designated endowments	25,252	400	25,652
Available for expenditure	(35,450)	(114,638)	(150,088)
Redesignations, reclassifications, and other	(8,518)	9,845	1,327
September 30, 2018	$ 678,678	$ 2,227,520	$ 2,906,198
Investment return, net	15,955	133,403	149,358
Contributions and pledge payments	-	93,949	93,949
Additions to board-designated endowments	35,347	-	35,347
Available for expenditure	(37,003)	(123,164)	(160,167)
Redesignations, reclassifications, and other	(37,988)	(37)	(38,025)
September 30, 2019	$ 654,989	$ 2,331,671	$ 2,986,660

The line item "redesignations, reclassifications, and other" includes the effects of changes in donor-imposed restrictions or Institute designations and certain endowment management costs.

(Dollars in Thousands)

Under Accounting Standards Codification 958, for accounting purposes the Institute must maintain the historical values of underwater donor-restricted endowment funds as net assets subject to donor restrictions that are perpetual in nature. Deficiencies in fair value of such funds relative to their historical values reduce the portion of net assets with donor restrictions that is subject to time and/or purpose restrictions, and diminish with fair value appreciation. The aggregate deficiencies in fair value relative to historical cost for underwater endowments at September 30, 2019 and 2018 were as follows:

	2019	2018
Aggregate historical value	$ 249,575	$ 184,027
Aggregate fair value	234,883	174,614
Aggregate deficiency	$ (14,692)	$ (9,413)

The Institute's endowment spending policy and applicable laws permit the appropriation of endowment spending from underwater funds unless prohibited by donor-imposed restrictions. During the years ended September 30, 2019 and 2018, the Institute appropriated spending of $12,291 and $9,347, respectively, from certain underwater funds in accordance with the policy, so as not to suspend certain Institute programs. The policy requires the Institute's management to monitor and approve spending from underwater funds annually on a fund-by-fund basis and to report annually to the Board of Trustees regarding underwater funds.

I. Postretirement and Postemployment Benefits

Postretirement Health and Life Insurance

The Institute provides postretirement health and life insurance benefit plans to eligible retirees and their dependents. The Institute's obligation related to these benefits is actuarially determined based on a September 30 measurement date. The Institute also provides defined contribution retirement plans, which are described at the end of this note.

(Dollars in Thousands)

Components of the funded status of postretirement benefits reported in the Institute's balance sheets and changes therein were as follows for the years ended September 30, 2019 and 2018. Additional detail regarding the JPL and Campus-related portions of the funded status of postretirement benefits is provided at the end of this note.

	2019	2018
Change in the accumulated postretirement benefit obligation:		
Benefit obligation at beginning of year	$ 455,830	$ 466,696
Service cost	12,625	12,956
Interest cost	19,627	18,299
Benefits paid	(14,258)	(17,855)
Actuarial (gain)/loss	71,834	(24,266)
Benefit obligation at end of year	545,658	455,830
Changes in plan assets:		
Fair value of plan assets at beginning of year	98,298	72,566
Return on plan assets	5,684	8,454
Employer contributions	34,035	35,133
Benefits paid	(14,258)	(17,855)
Fair value of plan assets at end of year	123,759	98,298
Funded status	$ (421,899)	$ (357,532)

Benefits for campus retirees and their dependents are funded on a pay-as-you-go basis. Benefits for JPL retirees and their dependents are funded by NASA according to an accrual accounting approach based on the Federal Acquisition Regulation. JPL-related contributions in excess of benefits paid are held in a trust for the benefit of JPL retirees and are invested according to the related plan's investment policies. At September 30, 2019 and 2018, trust investments consisted of short-term investments and non-publicly traded collective trust funds and mutual funds. Short-term investments are classified in level 1 of the valuation hierarchy described in Note K, and the collective trust funds and mutual funds, which have readily determinable fair values, are classified within level 2 of that hierarchy.

Trust investments were held as follows at September 30, 2019 and 2018:

	2019	2018
Short-term investments	$ 271	$ 454
Collective trust funds	36,693	29,023
Mutual funds	86,795	68,821
Total investments	$ 123,759	$ 98,298

(Dollars in Thousands)

Net periodic postretirement benefit cost was as follows for the years ended September 30, 2019 and 2018:

		2019		2018
Components of net periodic postretirement benefit cost:				
Service cost	$	12,625	$	12,956
Interest cost		19,627		18,299
Expected return on plan assets		(5,897)		(4,517)
Amortization of prior year service credit		(26,305)		(26,305)
Amortization of loss		3,132		5,531
Net periodic benefit cost	$	3,182	$	5,964

The statements of activities include the effects of changes in funded status that are not otherwise recognized in net periodic postretirement benefit cost. The effects related to JPL for the years ended September 30, 2019 and 2018 were an increase of $72,204 and a decrease of $6,657, respectively, in both JPL direct expense and revenue and also in deferred U.S. government billings, as any cost associated with this adjustment related to JPL is contractually recoverable from NASA. The effects of those changes for the Campus were a decrease of $23,016 and an increase of $772 in net assets without donor restrictions for the years ended September 30, 2019 and 2018, respectively, and are recorded in non-operating changes in net assets in the statements of activities.

At September 30, 2019 and 2018, the differences recognized in net assets without donor restrictions between cumulative net periodic postretirement benefit cost, less cumulative contributions, and funded status were as follows:

		2019		2018
Prior service credit	$	(25,253)	$	(31,630)
Net loss		39,740		23,101
Cumulative amounts recognized in net assets without donor restrictions	$	14,487	$	(8,529)

Any actuarial deferrals resulting from changes in the accumulated postretirement benefit obligation are amortized over the average future working lifetime of Institute employees. An estimated prior service credit of $26,305 and actuarial loss of $7,605 will be amortized into net periodic benefit cost during the year ending September 30, 2020.

(Dollars in Thousands)

The following weighted-average assumptions were used to determine the Institute's net periodic benefit cost under the plans for the years ended September 30, 2019 and 2018:

	2019	2018
Discount rate	4.40%	4.00%
Discount rate for service cost	4.40%	4.10%
Expected return on plan assets	5.50%	5.50%
Health care cost trend rate	7.25%	7.25%

To develop the expected long-term rates of return on assets noted above, the Institute considers the historical returns and future expectations for each asset class, as well as the asset allocation of the retirement plan's investment portfolio. Estimated future returns are based on expected returns for various asset categories. The evaluation of the historical and future returns resulted in the selection of 5.50% for the expected return on plan assets.

The following weighted-average assumptions were used to determine the Institute's obligation under the plans at September 30, 2019 and 2018:

	2019	2018
Discount rate	3.30%	4.40%
Discount rate for service cost	3.40%	4.40%
Health care cost trend rate	7.00%	7.25%

The Institute's postretirement medical benefit plans provide a substantial portion of the Institute's retirees and their eligible dependents annual awards of defined-dollar credits that are available to be used by retirees for medical premiums and other eligible medical expenses. The defined dollar credits may be changed in future years at the Institute's discretion. Certain grandfathered retirees and eligible dependents remain eligible for future medical benefits at no cost through an Institute-sponsored plan. The cost of these benefits is expected to increase in the future based on health care cost trend rates. The assumed health care cost trend rate is a 7.00% increase in 2020, after which annual rates of increase are assumed to decrease approximately 0.25% per year until 2030, after which healthcare cost is assumed to increase 4.25% annually in all future years. The effects of changes in these rates are not expected to be material to the benefit obligation or to related amounts recoverable from NASA.

(Dollars in Thousands)

At September 30, 2019, the estimated future benefit payments are as follows:

Year Ending September 30	Campus	JPL	Total
2020	$ 5,250	$ 14,831	$ 20,081
2021	6,890	13,874	20,764
2022	7,202	14,438	21,640
2023	7,531	15,037	22,568
2024	6,888	14,993	21,881
2025-2029	34,907	84,577	119,484

Additional detail regarding the JPL and Campus-related portions of the funded status of postretirement benefits and changes therein for the years ended September 30, 2019 and 2018 is as follows:

	Campus	JPL	Total
September 30, 2019			
Benefit obligation at end of year	$ 144,377	$ 401,281	$ 545,658
Fair value of plan assets at end of year	-	123,759	123,759
Funded status	$ (144,377)	$ (277,522)	$ (421,899)
September 30, 2018			
Benefit obligation at end of year	$ 121,239	$ 334,591	$ 455,830
Fair value of plan assets at end of year	-	98,298	98,298
Funded status	$ (121,239)	$ (236,293)	$ (357,532)

Defined Contribution Program

The Institute provides a defined contribution retirement program for eligible academic and administrative employees. Contributions to Internal Revenue Code "IRC" Section 403(b) defined contribution plans for the years ended September 30, 2019 and 2018 were $27,410 and $26,279, respectively, for the Campus and $95,709 and $93,288, respectively, for JPL. The Institute has no assets or liabilities related to these plans.

At September 30, 2019 and 2018, prepaid expenses and other assets included $104,003 and $96,599, respectively, in assets held pursuant to IRC section 457 defined contribution retirement plans. These assets are invested with external investment managers and are stated at fair value as further described in Note K. The Institute's liabilities related to these funds were $103,432 and $96,039 at September 30, 2019 and 2018, respectively, and are included in accrued compensation and benefits in the balance sheets.

J. Liquidity and Funds Available for General Expenditure

The Institute manages its financial assets and liquidity resources in order to provide cash for payment of general expenditures, such as operating expenses, construction costs, and principal payments on debt. Financial assets classified below as available for general expenditure within one year, computed in accordance with Accounting Standards Codification 958, are those that are considered both convertible to cash and free of donor-imposed and/or contractual restrictions that would limit or prevent the use of such cash to fund general expenditures.

(Dollars in Thousands)

At September 30, 2019 and 2018, the Institute's financial assets and liquidity resources available for general expenditure within one year were as follows:

	2019	2018
Financial assets available within one year:		
Cash and cash equivalents	$ 6,510	$ 6,174
Accounts and notes receivable, net	368,827	386,774
Expected pledge payments available for operations	19,962	6,823
Other investments	239,234	355,740
Investments and gains subject to subsequent year's endowment spending	161,455	153,430
Total	795,988	908,941
Liquidity resources:		
Committed lines of credit	$ 400,000	$ 400,000
Less: current borrowings under lines of credit	(91,643)	(157,353)
Total	308,357	242,647
Total financial assets and liquidity resources available within one year	$ 1,104,345	$ 1,151,588

As detailed in Note G, the Institute maintains certain internally imposed limits on the use of its lines of credit for operating, liquidity, and construction purposes. Those limits may be changed with the concurrence of the Institute's Board of Trustees, and, therefore, such internally imposed limits have been omitted from the Institute's determination of available liquidity resources.

Under the Institute's cash management policies, cash received from endowment spending related to either funds functioning as endowment or donor-restricted endowments is available for general expenditure. Endowment spending distributed from donor-restricted endowments is reflected in the Institute's records as net assets with donor restrictions until the expenditures actually are incurred; such expenditures are funded by available financial assets and/or liquidity resources at the time they are paid.

Although the Institute does not normally intend to use endowment resources in excess of amounts appropriated annually according to its endowment spending policy, at September 30, 2019 and 2018, the Institute had $654,989 and $678,678, respectively, in funds functioning as endowment and included in net assets without donor restrictions that were available for general expenditure, subject to the concurrence of the Board of Trustees. Various redemption restrictions on underlying endowment investments could reduce the amount of cash immediately available from a redemption of a significant amount of funds functioning as endowment.

As noted in Note L, the Institute was committed to fund certain construction and services contracts from available financial assets and liquidity resources in the amount of $174,061 at September 30, 2019.

K. Fair Value

Fair value under GAAP is defined as the price that the Institute would receive upon selling an asset or would pay to settle a liability in an orderly transaction between market participants. The Institute evaluates the fair value of financial instruments using an established hierarchy that ranks the inputs to valuation techniques used to measure fair value. Inputs refer broadly to the assumptions that market participants would use in such fair value determinations, including assumptions regarding various risks. A financial instrument's level within the fair value hierarchy is based on the least-transparent level of any input that is significant to the fair value measurement. The classification of financial instruments within the hierarchy is based upon the transparency of the inputs to valuation techniques used to measure fair value and does not necessarily correspond to the Institute's perceived risk of those instruments. The three levels of the fair value hierarchy are described below.

Level 1 fair value measurements are based upon unadjusted quoted prices for identical assets or liabilities in active, accessible markets. Market price data is generally obtained from exchange dealer markets.

Level 2 fair value measurements are generally based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market or can be corroborated by observable market data for substantially the full term of the instruments. Inputs to Level 2 measurements include, but are not limited to, interest rates, credit risk adjustments, and prices for similar instruments, and are obtained from various sources, including market participants, dealers, and brokers.

Level 3 fair value measurements are those that use significant inputs that are unobservable. Assets and liabilities included in Level 3 primarily consist of investments in real assets that are valued by investment managers or the Institute using industry-standard methodologies, independent appraisals, and Institute models. The Institute regularly monitors the adequacy of these fair value measurements. Fair value measurements derived using specific unobservable quantitative inputs developed by the Institute were not significant for the years ended September 30, 2019 and 2018.

The Institute generally uses net asset value ("NAV") as a practical expedient to determine the fair value of investments in funds that do not have readily determinable fair values and either have certain specific attributes of investment companies or prepare their financial statements consistent with the measurement principles of investment companies. For these funds, net asset values are determined by each fund's general partner or investment manager and are based on appraisals or other estimates that include considerations such as the cost of the fund's securities, prices of recent significant placements of securities of the same issuer, and subsequent developments concerning the companies to which the securities relate. The fair value of investments valued at NAV as a practical expedient are excluded from the fair value hierarchy.

(Dollars in Thousands)

The following is a summary of the fair value of the Institute's financial instruments according to fair value level or NAV at September 30, 2019 and 2018:

	Level 1	Level 2	Level 3	NAV	2019 Total
September 30, 2019					
Investments:					
Short-term investments	$ 348,320	$ -	$ -	$ -	$ 348,320
Fixed-income securities	29,138	90,608	-	-	119,746
Equity securities	487,254	300,147	36,798	392,264	1,216,463
Alternative investments:					
Alternative securities	-	-	-	827,156	827,156
Private equity	-	-	56,890	472,047	528,937
Real assets	-	15,312	148,894	214,933	379,139
Derivative assets	6,741	-	-	-	6,741
Total investments	$ 871,453	$ 406,067	$ 242,582	$1,906,400	$3,426,502
Other assets and liabilities:					
Beneficial interests	$ -	$ -	$ 29,639	$ -	$ 29,639
Defined contribution plan assets	41,625	29,756	32,622	-	104,003
Defined contribution plan liabilities	(41,173)	(29,672)	(32,587)	-	(103,432)
Interest rate swap	-	(62,530)	-	-	(62,530)

	Level 1	Level 2	Level 3	NAV	2018 Total
September 30, 2018					
Investments:					
Short-term investments	$ 188,811	$ -	$ -	$ -	$ 188,811
Fixed-income securities	29,562	132,554	-	-	162,116
Equity securities	621,597	177,858	35,053	531,167	1,365,675
Alternative investments:					
Alternative securities	-	-	-	918,528	918,528
Private equity	-	-	53,360	391,009	444,369
Real assets	-	17,945	164,833	228,782	411,560
Derivative assets	4,878	-	-	-	4,878
Derivative liabilities	(1,408)	-	-	-	(1,408)
Total investments	$ 843,440	$ 328,357	$ 253,246	$2,069,486	$3,494,529
Other assets and liabilities:					
Beneficial interests	$ -	$ -	$ 32,114	$ -	$ 32,114
Defined contribution plan assets	37,718	28,260	30,621	-	96,599
Defined contribution plan liabilities	(37,230)	(28,198)	(30,611)	-	(96,039)
Interest rate swap	-	(34,986)	-	-	(34,986)

The fair value of assets held in trust for postretirement benefit plans, as disclosed in Note J, is excluded from the tables above.

(Dollars in Thousands)

At September 30, 2019 and 2018, additional detail regarding the Institute's investments valued using NAV by major investment category was as follows:

	Fair Value	Unfunded Commitments	Normally Allowable Redemption Frequency	Redemption Notice Period in days	Lives in years
September 30, 2019					
Equity securities					
Quarterly or less	$ 71,871	$ -	Quarterly or less	90 to 180	-
Greater than quarterly	320,393	-	Annually to triennially	60 to 120	-
Alternative investments:					
Alternative securities					
Quarterly or less	154,091	-	Quarterly or less	60 to 90	-
Greater than quarterly	447,855	-	Semi-annually to triennially	60 to 180	-
Not actionable	225,210	147,415	Not actionable	-	up to 16
Private equity					
Greater than quarterly	10,694	8,503	Every four years	270	-
Not actionable	461,353	187,594	Not actionable	-	up to 10
Real assets	214,933	125,205	Not actionable	-	up to 12
Total	$ 1,906,400	$ 468,717			

	Fair Value	Unfunded Commitments	Normally Allowable Redemption Frequency	Redemption Notice Period in days	Lives in years
September 30, 2018					
Equity securities					
Quarterly or less	$ 216,112	$ -	Quarterly or less	7 to 180	-
Greater than quarterly	315,055	5,308	Annually to triennially	60 to 120	-
Alternative investments:					
Alternative securities					
Quarterly or less	141,365	-	Quarterly or less	60 to 90	-
Greater than quarterly	535,845	-	Semi-annually to triennially	30 to 90	-
Not actionable	241,318	173,560	Not actionable	-	up to 17
Private equity					
Greater than quarterly	10,620	10,730	Every four years	270	-
Not actionable	380,389	185,136	Not actionable	-	up to 10
Real assets	228,782	140,275	Not actionable	-	up to 10
Total	$ 2,069,486	$ 515,009			

(Dollars in Thousands)

In addition to the unfunded commitments noted above, at September 30, 2019 and 2018, the Institute was committed to invest an additional $38,396 and $21,573, respectively, in investments classified within the fair value hierarchy over approximately the next ten years. All such investment commitments are expected to be funded from existing or forecasted investment assets.

The methods described above may produce fair value calculations that might not be indicative of net realizable value or reflective of future fair values and do not include potential transaction costs or discounts or premiums, if any. Alternative investments may not be readily marketable or redeemable, and may contain penalties for early withdrawal from the related funds. Furthermore, while the Institute believes its valuation methods are appropriate and consistent with those of other market participants, the use of different methodologies and/or assumptions to determine fair values of certain financial instruments could result in different estimates of fair value.

The following table is a summary of changes in the fair values of the Institute's Level 3 assets for the years ended September 30, 2019 and 2018:

	Beginning Balance	Gifts and Purchases	Sales and Maturities	Realized Gain/(Loss)	Unrealized Gain/(Loss)	Ending Balance
September 30, 2019						
Investments:						
Equity securities	$ 35,053	$ 5,000	$ (92,034)	$ 74,491	$ 14,288	$ 36,798
Alternative investments:						
Private equity	53,360	-	(239)	-	3,769	56,890
Real assets	164,833	8,065	(18,827)	959	(6,136)	148,894
Total investments	$ 253,246	$ 13,065	$ (111,100)	$ 75,450	$ 11,921	$ 242,582
Other assets:						
Beneficial interests	$ 32,114	$ 5,832	$ (8,722)	$ -	$ 415	$ 29,639
Defined contribution plans	30,621	2,564	(1,511)	-	948	32,622

	Beginning Balance	Gifts and Purchases	Sales and Maturities	Realized Gain/(Loss)	Unrealized Gain(/Loss)	Ending Balance
September 30, 2018						
Investments:						
Equity securities	$ 25,118	$ 1,594	$ (1,993)	$ 1,993	$ 8,341	$ 35,053
Alternative investments:						
Private equity	24,392	16,790	(2,218)	16	14,380	53,360
Real assets	172,656	9,427	(26,543)	481	8,812	164,833
Total investments	$ 222,166	$ 27,811	$ (30,754)	$ 2,490	$ 31,533	$ 253,246
Other assets:						
Beneficial interests	$ 48,038	$ 4,506	$ (19,809)	$ -	$ (621)	$ 32,114
Defined contribution plans	28,291	5,378	(3,900)	-	852	30,621

The Institute classifies defined contribution plan liabilities in the fair value hierarchy based upon the investments of the related plan assets. Accordingly, liabilities classified within Level 3 approximate the value of plan investments that also are classified within Level 3, and increase or decrease in value according to contributions, withdrawals, vesting, and investment performance.

The Institute records transfers into the fair value hierarchy and/or between levels therein in the current fiscal year when there is a change in circumstances that affects the liquidity of the assets and/or the ability to observe and measure the fair value. The Institute records such transfers based on the market value at the beginning of the reporting period. During the years ended September 30, 2019 and 2018, there were no transfers in or out of Level 3. During the year ended September 30, 2019, there were transfers of $127,143 into Level 2 from the NAV classification. During the year ended September 30, 2018, the Institute reclassified an investment valued at $16,790 from the NAV classification to Level 3. All of these transfers are included in Gifts and Purchases in the tables above.

During the years ended September 30, 2019 and 2018, net unrealized gains of $523 and unrealized losses of $650, respectively, related to certain Level 3 assets were recorded in non-operating gifts and pledges in the statements of activities. All other realized and unrealized gains related to Level 3 assets were recorded in non-operating investment return in excess of payout in the statement of activities. Unrealized gains included in the statements of activities related to those Level 3 assets held at September 30, 2019 and 2018 were $12,221 and $32,633, respectively.

The Institute uses an interest rate swap to manage the interest rate exposure of a portion of its variable rate debt. The value of the interest rate swap depends upon the contractual terms of, and specific risks inherent in, the instrument, as well as the availability and reliability of observable inputs. The interest rate swap is valued using observable inputs, such as quotations received from counterparties, dealers, or brokers, market prices for reference securities, credit curves, and assumptions for nonperformance risk, whenever available and considered reliable, and is therefore classified in Level 2 of the fair value hierarchy.

(Dollars in Thousands)

During the years ended September 30, 2019 and 2018, the Institute used exchange-traded equity derivatives and foreign currency derivatives, including put and call options, to manage its market and currency exposures related to certain equity investments. Balances and activities related to equity and foreign currency derivatives for the years ended September 30, 2019 and 2018 were as follows:

	2019			2018
	Equity	**Foreign Currency**	**Total**	**Total**
Investments:				
Gross derivative assets	$ -	$ 6,741	$ 6,741	$ 4,878
Gross derivative liabilities	-	-	-	(1,408)
Derivatives, net	$ -	$ 6,741	$ 6,741	$ 3,470
Notional value: assets	$ -	$ 50,000	$ 50,000	$ 122,591
Notional value: liabilities	-	-	-	(148,429)
Investments pledged	-	-	-	80,958
Investment returns/(losses):				
Realized gain/(loss)	$ 35	$ -	$ 35	$ (6,403)
Unrealized gain/(loss)	(162)	3,475	3,313	4,357
Net investment returns/(losses)	$ (127)	$ 3,475	$ 3,348	$ (2,046)

L. Contingencies and Commitments

Contingencies

The Institute receives funding or reimbursement from agencies of the United States government for various activities that are subject to audit, and is a defendant in various legal actions incident to the conduct of its activities. Except as specifically discussed below, management does not expect that liabilities, if any, related to these audits or legal actions will have a material impact on the Institute's financial position. However, the settlement of audits or legal actions is subject to inherent uncertainties, and it is possible that such liabilities, if any, will differ materially from management's current expectations.

In 1997, the Institute was named as a potentially responsible party ("PRP") by NASA under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended. As a PRP, the Institute may be jointly liable for contribution towards clean-up costs, estimated to be in excess of $100,000, of the NASA/JPL Superfund site.

Officials of the Institute presently are not able to predict the impact, if any, that final resolution of this matter will have on the Institute's financial position or changes in its net assets. However, the Institute believes that it will have recourse to the United States government for any liabilities it may incur in connection with being named a PRP for that site.

(Dollars in Thousands)

Commitments

The Institute was committed under certain construction and services contracts in the amounts of approximately $174,062 and $269,642 at September 30, 2019 and 2018, respectively.

The Institute is a member of an international consortium that was organized to construct and operate an advanced telescope. In addition to the above, at September 30, 2019 and 2018, the Institute was committed to provide cash totaling approximately $49,000 and $64,000, respectively, to the consortium over approximately the next two years. Payments and other transfers related to this commitment are subject to certain contingencies.

The Institute's workers' compensation insurance carrier requires that the Institute maintain an unsecured letter of credit for claims that do not exceed certain deductible amounts. At September 30, 2019 and 2018, the amounts of the letter of credit facility were $8,093 and $7,093, respectively. The letter of credit was not used during the years ended September 30, 2019 and 2018, and therefore no liability has been recorded in the balance sheets.

The Institute is currently providing funding for the operation of certain local water treatment facilities, subject to reimbursement from NASA. Current annual costs are not expected to exceed $9,000. The expected duration of such annual payments is not determinable.

The Institute leases equipment and buildings, primarily for JPL, under operating leases expiring at various dates through 2024. Rent expense incurred under operating lease obligations was $6,257 and $7,720 for the years ended September 30, 2019 and 2018, respectively.

At September 30, 2019, future minimum payments under operating leases of greater than one year in duration were as follows:

Year Ending September 30	Amount
2020	$ 3,587
2021	3,316
2022	1,269
2023	1,159
2024	-
Total	$ 9,331

Approximately $9,187 of the future minimum lease payments listed above is expected to be recoverable from NASA under the Institute's cost-reimbursable contract with NASA.

The Institute rents housing, equipment, and building space to students, faculty, and other organizations under operating leases expiring at various dates through 2024. Rental income under operating leases was $3,510 and $9,332 for the years ended September 30, 2019 and 2018, respectively.

(Dollars in Thousands)

At September 30, 2019, minimum future rental revenues from operating leases of greater than one year in duration were as follows:

Year Ending September 30	Amount
2020	$ 3,386
2021	3,085
2022	3,000
2023	2,966
2024	2,793
Total	$ 15,230

M. Supplemental Cash Flow Information

The following are additional supplemental disclosures related to the statements of cash flows:

	2019	2018
Cash paid during the year for interest, net of amounts capitalized	$ 42,264	$ 47,160
Income tax paid	1,443	-
Non-cash investing and financing activities:		
Securities received to satisfy pledge payments	15,346	22,232
In-kind receipt of securities, property, plant, and equipment	11,431	43,696
(Decrease)/increase in accrued purchases of property, plant, and equipment	(4,580)	10,524
Decrease/(increase) in net amounts receivable for pending investments transactions	21,797	(45,770)

N. Subsequent Events

Subsequent events were evaluated through January 29, 2020, which is the date the financial statements were issued.