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Utah Department of Environmental Quality
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1-800-458-0145

Annual Report

For the period of 2016

Granite Construction Company - Cottonwood Facility

Facility Name

1000 North Warm Springs Rd. Salt Lake City, Utah 84116

Facility Street Address

City

Zip

Project Status

On a separate sheet, summarize:

- your Clean Utah project commitments and accomplishments made to date,
- major indicators of environmental improvements (measurable ways that you are determining the environment is improving as the result of steps you are taking),
- public participation activities you have undertaken, and
- your project plans for next year, as they relate to this program.

Certification Statement

(to be signed by the senior facility manager)

I certify that the information outlined in the attached annual report is correct and that this facility continues to meet all program criteria and has an active EMS, as defined by the Clean Utah program. I further certify that this facility has conducted periodic assessments of compliance with legal requirements, has corrected all identified instances of noncompliance, and is currently in compliance with all applicable federal, state, and local environmental rules and regulations.

Signed

February 16, 2017

Date

Mark Greenwood

Print Name

Environmental Manager

Title



Granite Construction Company
2015 Environmental Improvement Project Results

Improvement Project #1: Cottonwood Wash Plant Facility – Operation of Belt Press and Dewatering Screen

Targeted Reduction Goals: Baseline comparison year is 2007

- 25% reduction in wash plant water use

Water Usage Measurement Results - 2015

	Baseline (2007)	Year 10 (2016)	Delta (%)	Goal (%)
Wash Plant Water Usage Total	12,717,632 gal	7,573,765* gal	- 40%	NA
Wash Plant Production	463,057 tons	394,385 tons	- 15%	NA
Gallons Used Per Tons Produced	27.5 gallons/ton	20.9 gallons/ton	- 24%	- 25%

* Assumes a 41% water loss in recirculating the water recovered and reused (8,284,303 total gallons) from belt press and dewatering screen.

Water Usage Performance Discussion

For the 2016 evaluation period we continue to demonstrate significant reductions in utility-provided water use associated with our washed aggregate processing. Accounting for the recycle and reuse of approximately 8.3 million gallons of process wash water, the performance success resulted in a decreased use of 24% of utility-provided water for the period on a per ton basis for washed product. The 2016 reduction goal of 25% of water use per ton of material was almost achieved this year. It is assumed the extremely hot and dry year in 2016 increased the loss and use of water from the aggregate wash plant and belt press.

Based on the recovery and reuse of the reclaimed water, the economic benefit from water recovery and reuse at the facility for the 2015 period resulted in an approximate cost savings of \$9,500.

Improvement Project #2: Cottonwood Aggregate Plant Electric Utility Conversion – Diesel Fuel and Air Pollutant Reductions

Targeted Reduction Goals: Baseline comparison year is 2012

- Track estimated diesel fuel consumption reduction
- Track estimated air pollutant reduction
- Quantification of economic benefit

Beginning in 2013, the Cottonwood Aggregate facility was improved by connection to the local electrical utility. This infrastructure improvement allowed for the permanent removal of two diesel-powered electrical generators that were historically used to supply power to the aggregate operations at the facility. All of the reported performance indicators were normalized, using 2012 production/consumption information (0.27 gallons of diesel per ton of material produced). In 2016, the Cottonwood facility produced 1,093,582 tons of recycled asphalt (RAP) and aggregate.

- Total estimated diesel fuel savings (gallons not consumed) = 290,088 gallons
- Total estimated fuel cost savings (assuming \$2.80/gal) = \$812,245
- Total estimated electrical utility cost for 2015 = \$437,433
- **Net economic cost savings for 2016 (estimated) = \$374,813**

The environmental benefits for the improvement project resulted in a significant reduction of air pollutants through the permanent removal of two diesel fired generators. The air pollutant reductions estimated for 2016 are as follows:

- CO reduced by 16.89 tons
- NOX reduced by 25.89 tons
- PM10 reduced by 1.14 tons
- PM2.5 reduced by 0.95 tons
- SOX reduced by 10.04 tons
- VOCs reduced by 1.79 tons

Improvement Project #3: Compressed Natural Gas (CNG) Vehicles – Air Pollutant Reductions and Energy Cost Savings

Targeted Reduction Goals: Baseline comparison is between identical year gasoline vehicles.

- Track estimated CNG fuel consumption
- Quantification of economic benefit
- Track estimated air pollutant reduction

Granite purchased two Ford F-150 trucks in December 2014 and converted them to dedicated CNG vehicles (i.e. only runs on CNG) in January 2015. A third F-150 was purchased in April 2015 and was converted to a dual fuel vehicle (i.e. CNG and gasoline). Two additional F-150 trucks

were purchased in April of 2016 which were converted as bi-fuel vehicles. The drivers of each vehicle recorded each refueling event and noted the date, quantity of CNG (volume in units of gasoline gallons equivalent or gge) cost per gge of CNG, and the cost of gasoline on the same day. Each driver submitted monthly tracking information that was compiled into a single database. A summary of the CNG pilot study 2016 outcomes are included below. The conversion annualized costs assumes \$10,000 per conversion with depreciation over 10 years at three percent.

- 2016 Total Miles/Gallons: 581,114 miles or 2,767 gallons
- Fuel cost savings: \$1,683
- Annualized cost of conversions: \$3,517
- Annual savings: - \$1,834

The financial benefit of this project was frustrated by the continued low cost of crude oil. The decrease has dramatically reduced the cost of gasoline, with an annual average cost of \$2.22 per gallon, has limited the profitability of the converted vehicles. It is assumed however, that over the life span of the vehicles, the cost difference between CNG and gasoline will increase and provide a net financial benefit.

The emissions reductions were estimated using the EPA tool Fleet (2013). The tool is a compilation of national data that determines the emissions from a variety of alternative fuels that incorporates the life cycle of the fuel. This includes emissions generated from processing the fuels (such as refining crude oil to gasoline or diesel) and applies area specific emission factors to the estimates. The total reductions are listed below:

- Total Green House Gases: 6.10 tons/yr
- Total Urban Pollutants (NO_x, SO_x, CO, PM, & VOCs): 0.1 tons
- Reduced Petroleum Barrels consumed: 57.42 bbls

Improvement Project #4(New Project): Electric Vehicle Charging Station. Evaluate the possibility of installing one of more electric vehicle charging stations in the Warm Springs Employee Parking area.

During 2016, Granite construction planned locations and received estimates from electric installation companies for installation of five charging stations. The stations will be located at the Warm Springs facility (two stations), the West Haven Office (two stations) and our Cottonwood facility (one station).

Public Participation Activities

We continue to engage the public and our neighbors at all of our materials facilities to educate them regarding process improvements and new technologies we have implemented to improve our business and environmental performance.

Community outreach continues to be an important part of our business plan and philosophy as a company and community partner. During 2016 we continued our efforts to sponsor and support numerous community events and charitable organizations. One such event was the

Ogden Marathon where Granite was a financial contributor. We are committed to continuing our public participation and community involvement efforts for 2017 and beyond.

Clean Utah Project Plans for 2017

The Clean Utah Project Plans for 2017 include:

- 1) (Existing Project) Continue to track and report water conservation for the belt press and dewatering screen at the Cottonwood Aggregate Facility.
- 2) (Existing Project) Cottonwood Aggregate Facility Electric Utility Conversion. This improvement project will track air pollutant emissions reduction, diesel fuel use reductions and economic benefits.
- 3) (Existing Project) Compressed Natural Gas Vehicles. Utah has added five CNG vehicles to the pickup fleet, as of January 2017. This project will continue to track and evaluate cost, fuel conservation, environmental benefits (air pollutant reductions) and energy cost savings to transition our Utah Fleet toward lower emission vehicles.
- 4) (New Project) Granite plans to install five electric vehicle charging stations that will be open to all Granite employees. Granite will track the kw-hrs of use of the charging stations to estimate an overall reduction in vehicle emissions. The first year of use will establish a baseline for future years .