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CONDITION ASSESSMENT/PROPOSAL

Project No. **19140**

Contract: 47PA0117D0004

Order/Task No.: 47PA0119F0041

Date: 1/2/2020

PRINCIPAL OWNER OR CONTACT

U.S. General Services Administration
Fine Arts Program
1800 F Street, NW
Washington, D.C. 20405
Room 3341

ARTIST/ARTWORK:

Douglas Hollis, WATERSONGS, 1996, (AA297)
(see description for dimensions)
Granite, natural stones, fountain infrastructure

LOCATION:

USGS
345 Middlefield Road
Menlo Park, CA 94025

The work was completed on November 14, 2019, by Jim Gwinner, Conservator of Sculpture and Public Art, of McKay Lodge Conservation Laboratory, Inc. Mary Margaret Carr (GSA Fine Arts Officer), Yolanda Bernal (GSA Property Manager) and Bill McDonald (Northern Management Services) were also present.

DOCUMENTATION

The report is accompanied by 17"key" digital images printed and as files on a disc. The images are referenced in the text below by image numbers. The images are printed on Epson® archival paper with Epson® Ultrachrome K3 lightfast inks. In addition, on an enclosed Verbatim® Ultralife™ Gold Preservation disc (DVD), there are 90 digital images and five videos.

DESCRIPTION

The artwork is a site-specific installation consisting of water elements, seating, and a network of stainless-steel railings. The installation is located on the west side of the building and measures 200 feet from east to west and 45 feet from north to south. The work is comprised of the following elements:

FOUNTAIN

SOURCE POOL

The fountain recreates the impression of a mountain stream. It consists of a 7-feet x 7-feet x 5-feet high black granite cube located at the top of a stairway. It is constructed to form a basin that acts as the feed for a 7-feet-wide "stream bed" (Image 1). The cube slowly fills with water cascading down three of the sides in a sheeting action. The water falls into a channel at the base which contains a perforated stainless steel "screen" to prevent debris in the water system. The fourth side feeds the stream bed. The stream bed is a 7 feet wide "trough" following the stairway; it is composed of natural boulders and stones ranging in size (Image 2). The stones are arranged to create different patterns causing the water to flow and generate sounds which mimic a natural stream and waterfall (Image 3).

VORTEX POOL

The black granite cube feeds a channel which is 6 inches wide and approximately 85 feet in length terminating into a 5 feet diameter small circular pool. A vortex is created as the water flows into the pool (Image 4 & 5).

There is a stainless-steel screen and railing construction running the entire length of the channel and return wall. The screen is a double layer of perforated stainless steel with a typical "handrail" located on top (Image 6).

GROVE

A semicircular screen comprised of stainless steel is identical to the one located along the wall by the pool. The screen supports 24 stainless steel chairs, and the form is approximately 50 feet in diameter (Image 7). The chairs are fabricated from square perforated stainless steel. They are somewhat flexible when someone is seated in the chair.

The original concept documentation supplied by the GSA (which should be read but is not repeated here) mentions a large solitary oak tree that is no longer present. A replacement tree was planted, but it is still young and provides no shade for the seating area (Image 8).

CONDITION

FOUNTAIN

SOURCE POOL

The granite cube is in good condition structurally, and it shows no signs of settling into the ground. The cube is fabricated from black granite panels mitered at the corners. There is a small loss located at the proper left-hand side of the cube at the bottom (Image 9). Biological growth is present on all sides of the cube, and on portions of the surrounding granite, where there is constant water contact. A narrow strip of perforated stainless steel located at the base of the cube in the small channel is heavily stained and starting to corrode (Image 10).

STREAM BED

The stream bed is in good condition structurally. All of the stones are well-attached to the bed, and the sides have recently been waterproofed with a flexible sealant. The stones have a slight reddish brown discoloration suggesting that there is an overabundance of iron particles in the water.

The control room located below the top portion of the stream is accessed through a small opening in the wall. There is a control panel inside for all three of the pumps (Pumps 1 and 2 run the stream and Pump 3 controls the vortex pool) and a low-pressure sensor reset. An ozone generator is above the control panel (Image 11).

An electrical panel containing four time clocks, a cartridge filter, distribution piping, and Pump 3 are also located in this room. Pump 3 is a Flo-Master FMHP 1.5 hp pump. The cartridge filter is an American Products Predator. The pump, timers, cartridge filter, and distribution lines are all in excellent condition and properly functioning. The ozone generator is not functioning, and it appears to have been non-operational for quite some time.

According to the artist supplied documentation provided by the GSA, Timeclock 1 turns the overall system on in the morning and off in the evening, and it is currently set to run every day. Timeclocks 2, 3, and 4 as well as control solenoid control valves 1, 2, and 3 are preset in a sequence which varies the flow of the stream bed.

The granite blocks that compose the stream bed are in good condition and clean. The joints are tight, and there is no settling. The caulking is starting to fail.

RESERVOIR

The reservoir is accessed by opening the aluminum cover located below the sidewalk at the lower end of the stream bed (Image 12). The reservoir is 4 feet x 5 feet x 6 feet deep; the water depth is approximately 26 inches. It contains two l-hp Little Giant submersible pumps connected to 6 feet pipe supplying water to the main control room where it is then distributed to the source pool, the stream bed, the runnel, and the vortex pool. The reservoir also contains the resupply pipe and float valve that adds makeup water, or water used to replace evaporated or lost water, to the system. There is also a removable skimmer unit to catch leaves and other debris that will wash down the stream bed.

The original float valve system was problematic, and it was replaced by a more conventional "toilet bowl" style float valve which functions as needed (Image 12).

At the time of inspection, Pump 1 had failed, and it was in the process of being replaced. All other plumbing was operational. The standoffs, channel struts, and pipe clamps are all heavily corroded and most likely the primary source of the iron particles staining the rest of the fountain. The stainless-steel components are heavily tea-stained (Images 13 & 14).

WATER QUALITY

Bromine tablets were found in the filter tray and appear to be used very regularly (see Image 14); most likely, this is because the ozone generator is not functioning. The water quality was tested with the following results:

pH Level:	8.2 or above
Chlorine:	2.5-3.0
Bromine:	6.5
Total Alkalinity:	40 PPM

Optimal Values	
PH level:	7.2-7.6
Chlorine:	2.0
Bromine:	4.4
Total Alkalinity:	80 PPM

The results indicate that the pH level is so high that solids in the water such as calcium and iron particles fall out of suspension in the water; this is made evident by the scaling and staining found on the stainless-steel components and even on the natural stones found in the makeshift riverbeds.

In general, when the pH value is over eight, water gets cloudy potentially causing mineral deposition on pipes, nozzles, etc. Also, with a pH value above 8, chlorine is ineffective in killing alage and pathogens in the water. It can irritate eyes, ears, nose and throat too. High acidity can also cause a similar health effects, as well as corroding metal components in the fountain.

The bromine levels were high, but given the number of tablets found in the strainer, it is not unexpected.

VORTEX POOL

A channel in the south-facing side of the source pool appears to feed an approximately 85-foot long, 6-inch-wide channel terminating into a circular pool. There is an additional feed located on the side of the pool that is most likely the actual inlet. If enough water is supplied, controlled by a valve in the pump room, a vortex is created in the pool.

A stainless-steel railing system runs the entire length of the channel and the pony wall at a right angle to the channel wall (Image 15). The railing system is comprised of two layers of perforated stainless steel. The side facing the channel is somewhat angled with the layer opposite being completely vertical, a 4-inch-wide stainless-steel cap supports the handrail which runs the entire length of the wall.

The channel and pool have been coated with what appears to be a typical pool paint in a very light blue color. The coating is at the end of its useful lifespan; it is showing signs of deterioration, exhibited by fading, cracking and an overall worn appearance (Image 16). The pool bottom has settled dirt and a small amount of debris present. There is a perforated cylindrical screen covering a 4 inch drain pipe. The screen is beginning to demonstrate tea-staining.

All of the stainless steel is tea-stained and dirty. There is biological growth in some areas, but it is most frequently found underneath the handrail and on top of the cap.

GROVE

The screen and the chairs are in good condition. There are no damages or losses. The screen is soiled, and there is biological growth along the top rail and bottom of the handrail.

The soft-scaping surrounding the area is a combination of wood bark and small plants, but some of them are planted directly in front of the seating, blocking access. Various seating, such

as picnic tables, barbeques, and outdoor tables are also placed in this area. The wood bark makes it difficult for pedestrians to use the seating since it creates a very uneven walking surface (Image 17).

RECOMMENDATIONS

This report is accompanied by Proposal No. 20001.

FOUNTAIN

SOURCE POOL

The granite source pool should be washed with a hot water pressure washer (3500 psi) and a biocide such as D/2 Biological Solution (D/2 Biological Solution Inc., www.d2bio.com) to remove the grime and biological growth from the surface of the artwork. The application of poultices and/or an appropriate stone cleaner such as Prosoco® Sure Klean® masonry cleaner or equivalent should be used to remove any discoloration not previously removed by pressure washing.

The small loss located at the bottom on the proper left-hand side is not disfiguring, and it would be cost-prohibitive to repair. It should not be treated at this time.

The stainless-steel filter screen should be cleaned with the use of a passivation solution such as Bradford De Rustit™ (www.derustit.com) or equivalent; in addition to reducing corrosion this type of product should remove the biological growth and soiling. The passivation gel must be applied, allowed to react, then neutralized with water, and allowed to dry; this should be performed by a conservator. After treatment, the stainless steel will essentially “brighten” in appearance.

STREAM BED

The stream bed is in good condition. It requires no treatment at this time. The discoloration of the stones will eventually diminish once the source of the ferrous contamination is removed from the water source.

The granite blocks that comprise the stream bed need to be re-caulked; this should be done by removing the old product and replacing it with a high-quality sealant such as Tremco Dymonic 100 (www.tremcosealents.com) or equivalent product. A conservator should perform this treatment.

RESERVOIR / MECHANICALS

All of the ferrous materials should be stripped from the reservoir and replaced with a fiberglass alternative. The walls and all of the components of the reservoir should be cleaned to remove

the biological growth and as much of the rust staining as possible. The latter process can be accomplished with the use of a pressure washer and a commercial product such as American Hydro Systems Rid-O-Rust (https://proproducts.com) or equivalent. The tea-staining should be removed from the stainless-steel filter trap with the use of a passivation solution such as Bradford De Rustit™ or equivalent. The work should be rinsed and allowed to air dry after the application of the cleaners. The procedure should be performed by a conservator.

WATER TREATMENT

According to the building manager, there is a daycare located on-site and the general public has access to the fountain at all times. Water quality standards should be met to ensure the longevity of the fountain components as well as public safety.

The water should match the optimal values as noted in the WATER QUALITY section of this report as a general rule. For this to happen, a functioning water sanitation system should be installed. The non-functioning ozone generator should be replaced with an Advanced Oxidation Process (AOP) system. An AOP system is a combination of ozone and Ultra-Violet (UV) light in one process which sanitizes the water and reduces or eliminates the need for chlorine and bromine treatment. The systems are inexpensive to run and virtually maintenance-free. The lower chlorine and/or bromine levels will help to protect the metal elements of the fountain and stop biological growth; this system should be installed by a qualified pool services company that will also specify the correct system for this application.

Another technique to ensure water quality is frequent water changes. The water in the fountain could be completely drained and refilled every two weeks or when the pH rises to around eight or higher. The total volume of the fountain is estimated to be 1557 gallons. The cost of water in the area (according to the California Water Service Company), is $6.9489 per CCF (one CCF is 748 gallons) at the time of this report. This means the cost of replacing the water every two weeks would be approximately $15.00. Water loss due to evaporation was not calculated, but it can easily be done by measuring the water reservoir every day and recording the overall loss of water. Adding the number of lost gallons per week to the overall volume of the fountain will result in a close estimate for the water costs associated with running the fountain.

The combination of an AOP system and frequent water changes is therefore ideal in keeping the fountain free of contaminants. In nearly every case, the water costs are less expensive when compared to the cost of treating the water with chemical means. A reduction in chemical use is also safer for the public.

PUMPS

The artist states that the original pumps were made by Little Giant, but there was no further information on size or model number. The pumps were replaced at some point with Dayton 1 HP effluent pumps model number 4HU77. According to Bill McDonald, one of the pumps Pump 1, has failed and needs to be replaced. Pump 1 and 2 are the same make and model given that Pump 1 has failed. Pump 2 should be replaced as a preventative measure.

The Dayton pumps are made for sewage removal and typically have a high head and higher pressure than standard pumps. Pump head is the measure of the power of the pump. These pumps are expensive and not particularly necessary in this application; these pumps are also made from ferrous-based alloy thus contributing to the staining of the fountain. A submersible stainless-steel pump such as Myers stainless steel pump model number 330038 can be used as a direct replacement. In addition, there is the added benefit of reducing a source of iron staining. The pumps can be replaced by building personnel.

VORTEX POOL

The stainless wall or railing system that runs the length of the channel and return wall should be cleaned with the use of a passivation solution such as Bradford De Rustit™ or equivalent. This will remove the biological growth and soiling and "brighten" the appearance of the stainless steel. The passivation gel should be applied and allowed to react. It should then be neutralized with water, and allowed to dry; this should be performed by a conservator.

The channel and vortex pool have been coated with what looks like a standard pool bottom paint in a light blue color, a photograph supplied by the GSA soon after installation shows that the pool was originally black. The coating is at the end of its useful lifespan and needs to be recoated with a similar pool bottom paint in the original color. Solvent tests will have to be performed on the coating to identify the type of coating that is present. There are three possibilities; acrylic, rubber or epoxy. Testing with the chemicals below that will help identify the type of coating.

- Denatured Alcohol – softens/dissolves water-based acrylic
- Xylene (Xylol) – softens/dissolves rubber-based pool paints
- Butanone (MEK) – softens/dissolves epoxy pool paints

After identifying the current coating, the same type of coating should be selected and applied according to the manufacturer's recommendations. A conservator should perform the testing and recoating.

NOTE: Overcoating may prove to be unsuccessful if the existing coating is not well-bonded or too thick. The only way to guarantee to bond is to abrasive-blast the surface down to the original substrate. In this case, that would be cost-prohibitive and should only be done in the case of bonding failure.

GROVE

The stainless-steel railing should be cleaned with the use of a passivation solution such as Bradford De Rustit™ or equivalent. This will remove the biological growth and soiling and "brighten" the appearance of the stainless steel. The passivation gel should be applied and allowed to react. It should then be neutralized with water, and allowed to dry; this should be performed by a conservator.

The plantings, tables, and BBQs should be removed from the immediate area to encourage the use of the seating. The woodchips that are currently used as a ground cover should be replaced with decomposed granite or similar "pathway" type landscaping material to encourage pedestrian traffic. The changes may or may not have a positive effect due to the lack of shade; however, this will return the area to match the artist's original intent. This work can be performed by building maintenance personnel.

It should be noted that the treatment will create water run-off. The products used during treatment are biodegradable and pose no environmental hazards.