April 29, 2015

Mr. Dinh Vo  
Remediation Project Manager  
NASA/John F. Kennedy Space Center  
Mail Code: TA-A4B  
Kennedy Space Center, Florida 32899

Subject: Final Report - Artesian Well Abandonment at Launch Complex 39A  
John F. Kennedy Space Center, Florida  
Contract No. NNK12CA14B-NNK14CA26T

Dear Mr. Vo:

Jacobs Engineering Group, Inc. and CORE Engineering & Construction, Inc. (Jacobs-CORE) are pleased to submit this letter report documenting well abandonment activities at one site located at John F. Kennedy Space Center (KSC), Florida. The well abandonment activities documented in this report were conducted at Launch Complex 39A.

1.0 BACKGROUND

On September 25, 2014, the National Aeronautics and Space Administration (NASA) Remediation Project Manager (RPM) requested that Jacobs-CORE complete abandonment of an artesian well under Contract No. NNK12CA14B, Task Order No. 06. The site and task were:

- Launch Complex 39A: Abandon the artesian well located on the liquid oxygen (LOX) side of site, as the well is no longer utilized.

Project expectations and site-specific assignment details, including site access and notification requirements, were discussed between the NASA RPM and Jacobs-CORE personnel during a kick-off meeting held on October 30, 2014 at KSC. Logistics, schedules, and safety were also key topics discussed during the meeting. The abandonment method for the artesian well was communicated by the NASA RPM to be “abandon-in-place”, in the same manner as was done for the artesian well previously abandoned on the liquid hydrogen (LH2) side of the site in December 2012.

An addendum (Addendum No. 5) to the Site-Specific Safety and Health Plan (SSSHP) for Contract No. NNK12CA14B was issued by Jacobs-CORE in November 2014 to address work to be performed under Task Order No. 06. The SSSHP addendum was coordinated with the NASA RPM and was accepted by NASA Safety and Environmental Health in November 2014.

2.0 LAUNCH COMPLEX 39A

Launch Complex 39A is located east of the Vertical Assembly Building (VAB) area at KSC, adjacent to the Atlantic Ocean (Figure 1). The launch complex dates back to the 1960s and has been used for NASA’s Apollo and Space Shuttle programs. The launch complex is currently being leased to SpaceX where it is being modified to support future launches. Under environmental
regulation, Launch Complex 39A is designated as Solid Waste Management Unit (SWMU) 008, and is being managed for residual soil and groundwater contamination.

The artesian well tasked for abandonment was located on the LOX side (northwest area) of the launch complex (Figure 2). The exact date of well installation is unknown. The well was no longer in use at the time of the abandonment request, but was previously utilized under St. Johns River Water Management District (SJRWMD) consumptive use permit (No. 50054) for the Floridan Aquifer. The exact construction details of the LOX artesian well were also unknown; however, a similar-type artesian well was previously located on the LH2 side of the site, which was abandoned in 2012. Based on discussions with the NASA RPM and review of the LH2 artesian well abandonment completion report, the LH2 artesian well was reported to be an 8-inch diameter, 330-foot deep well. The NASA RPM communicated that the LOX artesian well was likely to be an 8-inch diameter, 380-foot deep well. This information was used for scoping, and was subsequently confirmed to be substantially accurate. No additional information could be found for the LOX artesian well using the NASA Remediation Information System (RIS).

The following sub-sections detail abandonment activities completed for the LOX artesian well located at Launch Complex 39A.

2.1 Pre-Abandonment Activities

Several activities were completed prior to initiating abandonment. The following sections outline these activities.

2.1.1 Permits

Various permits were obtained in preparation of well abandonment activities, which included:

- **Well Abandonment Permit**: A well abandonment permit was issued by SJRWMD in November 2014 (Permit No. 140159-1). Environmental Drilling Service, Inc. (EDS; Florida Water Well Contractor License Number 2406), which was subcontracted to perform the abandonment, applied for and obtained the permit.

- **Dig Permit**: A KSC excavation permit request (EPR) was submitted through the EPR Administrator on November 11, 2014. The request (No. 17195) was approved on November 12, 2014. The excavation permit inspector (EPI) was contacted prior to field work to mark utilities and obtain final signature on the permit. Environmental review comments regarding soil and groundwater constraints at the site were communicated with the point of contact (POC) designated on the permit prior to initiating field work. Correspondence was obtained from the POC that contaminated soil adjacent to the well had been excavated since the comment was made on the dig permit; therefore, no additional guidance was necessary.

- **Hot Work Permit**: A hot work permit was issued by the KSC Fire Inspector on December 8, 2014 (Permit No. 127775; renewed under Permit Nos. 128279 and 128915). The purpose of the hot work permit was to account for torching and grinding necessary to disassemble the well’s aboveground piping.
2.1.2 Electrical Switchbox Removal

In November 2014, the NASA RPM coordinated for power to be disconnected and for the associated electrical switchbox to be removed from the LOX artesian well. This was coordinated through an on-base engineering support request. Confirmation that power was disconnected and that the electrical switchbox was removed, was received via email by the NASA RPM on January 15, 2015. This was also confirmed during a site visit prior to mobilizing for the abandonment.

2.1.3 Water Controls Measures

Water controls measures became an integral part of the planning process to adjust to changing site conditions. In November 2014, the NASA RPM and Jacobs-CORE personnel visited the site to locate the artesian well and inspect the area for access. At the time of the site visit, only the transformer and supporting concrete pad were present in the area of the well. During a subsequent site visit in early January 2015, Jacobs-CORE noted additional work on-going in the area of the well, which included trenching new utility lines, excavation of contaminated soil, and installation of an air sparge groundwater remediation trailer. To account for these new activities, further coordination efforts were completed between Jacobs-CORE, the NASA RPM and the RPM for the remediation project, and stakeholders performing work in that area. Additional on-site visits were completed in late January 2015 with Jacobs-CORE personnel, air sparge trailer stakeholders, and a representative from the drilling company subcontracted to perform the abandonment. These visits were used to discuss and finalize access limitations, field work logistics, and water control/management options to protect surrounding infrastructure from potential accumulation of water during the abandonment process.

The recommended water control plan consisted of the use of hay bales to direct water away from the transformer and air sparge trailer, and towards the drainage ditch south of the well. Stakes would secure the hay bales. Sediment control measures were not deemed necessary for within the drainage ditch (in the event that water reached the ditch), as it was confirmed that a filter sock was already installed within the drainage ditch for other work that was being completed in that area. The recommended water control plan received concurrence from the NASA RPM. The plan was finalized in a document that was disseminated on February 2, 2015 to the NASA RPM, air sparge trailer stakeholders, and Jacobs-CORE personnel that would be overseeing the field work.

2.1.4 Start Date Coordination

Start dates for field work were coordinated with the NASA RPM, the SpaceX facility manager, and air sparge trailer stakeholders. The dates were also populated on the NASA RIS calendar.

2.2 Abandonment Activities

Abandonment of the LOX artesian well at Launch Complex 39A was completed between February 3-5, 2015. The abandonment was completed by EDS with field oversight and quality control (QC) performed by Jacobs-CORE. The well was abandoned-in-place with grout via tremie-method, and all aboveground completions were removed to below grade with exception of a portion of the discharge pipe. This pipe was left in place in the event that it might need to be reconnected to the LOX operations for a future use. Final site cleanup and restoration activities were completed by Jacobs-CORE on February 6 and 11, 2015.
The following sub-sections detail the stages of abandonment activities.

2.2.1 Field Work

Prior to each day of field work, daily “tailgate meetings” were held to discuss the day’s activities, review health and safety concerns and protocol, and confirm communication procedures. The dig status and the day’s forecasted weather and weather warning protocols were also discussed during these meetings. All applicable project and site-specific documentation (permits, SSSHP, maps, etc.) was kept on-site throughout the duration of abandonment activities.

Initial field activities involved set-up of planned water control measures, and staging of materials and equipment for the abandonment process. Two of the bollards located aside the well were also removed to obtain clear access for the equipment necessary to complete the abandonment. After set-up and staging were complete, a portion of the aboveground piping was dismantled to gain access to remove the well’s pump and riser. Extra attention was given to the method of disassembly, given the proximity of surrounding infrastructure and hay bale placement. Once the piping was dismantled, the drill rig was used to hoist the pump out of the well, which was found to be positioned approximately 35-feet below top of casing. A multi-purpose manifold was subsequently connected onto the wellhead as a junction to pump grout into the well, to direct return water flow, and to close-off the artesian flow in order to allow grout to set properly.

Once the manifold was connected, an initial batch of grout was pumped into the well to halt artesian flow. The grout was mixed on-site and consisted of water, neat cement, and a percentage of bentonite additive. A senior, registered professional geologist from Jacobs-CORE was on-site to oversee the formulation and ensure appropriate densities were achieved. The grout mixture was then pumped into the well through a tremie pipe that was positioned near the bottom of the well. Approximately 400 gallons of grout was pumped into the well at that time; nearly half of the calculated volume for an 8-inch, 380-foot well. After this grout mixture was added, the tremie pipe was retracted and the valve on the manifold was closed off to allow the grout to set overnight.

Following the overnight set-up period, clear artesian water flow was still encountered when the valve was opened. The flow was significantly reduced from the pre-abandonment flows; however, the continued flow of water indicated that either the grout did not fully set, or that the open interval within the aquifer was not fully covered by the grout that did set. The tremie pipe was re-installed into the well to tag the grout, and discovered that the grout was set below 250-feet. The tremie pipe was re-set to an appropriate depth in the well in order to pump in additional grout. This second stage of grouting halted artesian flow. The shut-off valve was closed again, and the grout was allowed to set overnight.

No artesian flow was encountered after the second overnight set-up period, and the grout was tagged at 150-feet. The tremie pipe was re-set in the well and a final stage of grouting was performed to bring the seal to grade. Once this was complete, the manifold was detached and the remainder of the wellhead piping was removed to below grade. The supporting concrete pad was also removed during this process. The area was then re-graded to match existing conditions and the site area was appropriately cleaned up and restored. A total of 130 bags of neat cement were documented to have been used for the abandonment process, which aligns with amounts needed for a 380-foot well.
Final field work activities included removing all the hay bales from the site, installing a blind flange on the portion of the discharge pipe remaining aboveground, and mending a copper grounding wire that was inadvertently damaged during the abandonment process. The blind flange was placed over the discharge pipe to prevent access to the pipe until such time as it may be necessary. These activities were completed by Jacobs-CORE personnel on February 6 and 11, 2015. The decision to leave a portion of the discharge pipe aboveground was communicated to, and was concurred by the NASA RPM.

A photo log and field notes from well abandonment activities are provided in Appendix A. A copy of the water control plan (discussed in Section 2.1.3) is included in Appendix B. Copies of the dig and hot work permits are also provided in Appendix B.

2.2.2 Disposal

Initial material disposal was completed on February 3, 2015 for the aboveground piping that was first dismantled to begin the abandonment. This material was initially taken to the Reutilization, Recycling and Marketing Facility located on Ransom Road; however, facility personnel directed the scrap material to be taken to a commercial facility. The material was subsequently transported to Dominion Metals in Cocoa Beach, Florida for recycling. The material recycled was registered as 1,000 pounds of tin. Copies of the disposal receipt is provided in Appendix C. All other material from the abandonment process was taken off-site by EDS following abandonment activities for proper disposal.

2.2.3 Well Completion Report

A well completion report was submitted back to SJRWMD on February 23, 2015 for the issued permit. The completion report was completed and relinquished by EDS. A copy of the well completion report, with associated permit, is provided in Appendix D.

3.0 SUMMARY

In February 2015, the LOX artesian well at Launch Complex 39A was properly abandoned-in-place with grout via tremie-method. The artesian well was 8-inches in diameter and approximately 380-feet deep. All aboveground completions were removed to below grade, with exception of a portion of the discharge pipe. A blind flange was placed over the discharge pipe that remained aboveground. Water control measures implemented at the site were effective in protecting surrounding infrastructure. Following abandonment, the area was re-graded to match existing surroundings and the site was cleaned up and restored appropriately. All materials (concrete pad, well pump, aboveground well piping, etc.) were disposed of accordingly.

If you have any questions or need additional information, please feel free to contact us.

Sincerely,

Deda Johansen     Lindsay Morgan, E.I.
Program Manager                           Project Manager

cc: John Armstrong, FDEP
Figure 2 - Well Abandonment Location
Launch Complex 39A

Legend
- Artesian Well Abandoned-in-Place

Artesian Well Information

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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<tbody>
<tr>
<td>Depth</td>
<td>380-feet</td>
</tr>
<tr>
<td>Diameter</td>
<td>8-inches</td>
</tr>
</tbody>
</table>

Coordinates

<table>
<thead>
<tr>
<th>Northing</th>
<th>Easting</th>
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</thead>
<tbody>
<tr>
<td>1554753.374</td>
<td>781878.092</td>
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</table>

Note: Coordinates in State Plane Florida - East, feet

Pre-abandonment Photo (November 2014)
November 2014: Pre-abandonment site conditions.
November 2014: Well tag identifying permit and use.

January 2015: The well’s electrical junction box was removed prior to well abandonment. Note utility line trenching and soil removal activities also completed in this timeframe.
January 2015: Soil removal activities were completed adjacent to the well prior to abandonment. These activities were not associated with the abandonment process.

January 2015: A groundwater remediation air sparge trailer was also installed adjacent to the well prior to abandonment.
29 January 2015: Hay bales were placed around the well as a water control to protect surrounding infrastructure and direct water towards the drainage ditch south of the well.

03 February 2015: Prior to the abandonment, the hay bales were secured using stakes.
03 February 2015: After a portion of the aboveground piping was removed, the drill rig was set up in preparation to remove the pump and riser.

03 February 2015: The pump and riser are hoisted out the well. The pump was positioned approximately 35 feet below the well casing.
03 February 2015: The hay bales were an effective water control measure.

04 February 2015: After the pump was removed, a manifold was connected onto the wellhead. Tremie pipe was installed to pump grout into the well.
04 February 2015: Grout was mixed on-site.

04 February 2015: Grout was pumped into the well via tremie-method.
05 February 2015: Once artesian flow was stopped, the manifold and remaining wellhead was removed and the grout seal was brought to grade.

05 February 2015: Once grouting was complete, the concrete pad was removed and the remaining wellhead piping was removed to below grade. The site was re-graded to match existing surroundings and the area was restored.
06 February 2015: A blind flange was placed on the remaining discharge pipe left above grade.

11 February 2015: A copper grounding wire inadvertently damaged during the abandonment process was fixed by Cad-welding.
0700 Arrive KSC Refueling Gate 1. 0730 meet time.

Task: LC-39A Well Abandonment.

Weather: upper 40's/low 50's, wind NW 5-10, mostly cloudy skies.

H/S: Hold on site.

Topics: go over H/S plan, AHA's, tool work permit, dry permit, restrictions, emergency procedure, site housekeeping.

Personnel: signed in on daily site access log.

Well Abandonment Volumes: 8'' x 380' = 2,680 cubic feet = 92,750 gallons.

Abandonment Procedure - Pressure Growing by Calculated Volume.

0730 EDS personnel arrive Gate 1.

0750 Arrive on site held at update H/S meeting.

0820 EDS crew begin preparation for well. Assemble all required DBH and set up to pull ball valves.

0850 EDS crew off load field spares and remove ball valves from around well.

Chris Newman on site w/TT.

Concrete upper trellis is tied to wooden frame making it difficult to remove. Replace per Chris Newman request.

Do not use carpet. Will get wet when rain occurs. Do not need to remove.

Chris Newman (412) 362-7756.

1300 Break for lunch before removing final values and installing abandonment tree.

1600 Return from lunch. Begin removing values from well.

1730 Pump Remain only hanging in well.

1-35' 6T0C

1445 Speak with Andy Specker and supervisor about use of platform as scaffold for growing.

1615 Trim pipe. I adjusted begin mixing cement to seal offcrest.

Mix 200 gallons of Portland Type III cement w/ 4% Bentonite added.

1700 400 gallons from 6T0C pumped into well. Water or cement showing signs of mixing. Beginning to build up 20 x 945.

1730 All personnel off site for E.O.D.
2-4-15   0239A   Oct 01

0700    Arrive on site 0239A 0730 meet time

Task:  Artesian well Abandonment, Site Restoration

Weather:  Upper 50's/low 60's, slight (low 20's), mostly cloudy

Winds:  NW 0-5 mph

H & S:  Hold on site personnel & topics on Daily

Tailgate H & S Log.

Personal:  Signed in on Daily site access log

Reg:  AREO ATU

0735    EDS crew arrive on site

0740    Hold tailgate H & S meeting

Additional topics:  Grant dust, granule poison & importance of site restoration & reinstallation

Beneath:

0800    Drop in trim pipe to 250' did not try

Bottom:  Well still flowing clear water

0830    Begin making Portland cement for Abandonment

of well

0855    400 gallons pumped pull trim pipe up

200' as to know lock in hole if grant is actually

clogging in hole Clear flow still coming out

of return line

0900    Trim pipe locked in hole proving Grant is

above 250' 615

0910    Recounted all 250' trim pipe

Reinstall trim pipe to 180' & continue

Greeting

0935    Flow Return flow stopped after additional

50 gallons pumped, Pump remaining mix

of 100 gallons & let sit sealed off until

Grant sets & then check for flow prior to

Continuation of Clogging

1030    EDS crew depts site to check out at hotel, will return back

Office to pick up checks & face shield

1120    Arrive back on site, waiting for EDS crew to return

1145    EDS crew back on site, will send down trim pipe to check

Grant level.

1155    Grant is around 240' 615, will bring pipe up to 180' 615 &

Begin to clog out at
2/4/15  EC-39A  Test 01

1200  Crew just informed me that flow has returned.

1215  Plan to pump some mix into well.

1225  Pile 200 Gals of gravel with no return. Pull up 20' of mix
      will mix another batch 15 lbs of gravel.

1230  Mix 7 bags of gravel with 1.5 gals of water with 5% bentonite
      in mix.

1235  Drill Va on site. Crew cleans for water.

1315  Crew returns with water. Mix up 200 Gals of water, gravel, 15 lbs
      of mix. Depth is 15' 6".

1330  Finish pumping, but no return of gravel or water. Crew will
      clean up well area. We will head back to shop for
      more gravel plus Jack hammer / generator to break up concrete
      around well.

1340  Drill deeper. Site, Compass with new drill rig.

1430  Taper down the drill platform.

1515  Crew has picked up all channeled around site. See Photos. They
      will go fill up on water. Will head over to see R. Robinson
      at Wilson Corner.

1630  Sent Photos and videos to L. Morgan (CEO).
2/5/15  LC-39A  Term 2011

Personal
Rick Allen (Crew)  Glen Pennington  Mitchell Pennington  Shin Crikk (EDS)

Task
Continue with boil abandonment at LC-39A.

Weather
Recent overnight prepping is some areas 46°F  50°F Humidity 96%
Wind 5-8 MPH  Pressure 29.85 In Hg  70% AM 15% PM

0630
Arrive at LC-39A. Check over site since heavy rain last night. Heavy
0725
EDS crew arrives onsite.
0730
Hold brief 4th silly meeting. See site for updates.
0735
Will start 4th line trim pipe to try to try to fix leaks in leak.
0750
Crew tags bottom at 320 kls with no wire return. Called Raymond
Robinson to let him know and text L. Morgan also. Crew
will begin to mix up great batch to seal leaks.
0815
Pumped in 200 Gals of water/great mix to bags at pitch end. Heat
return warm. Come back cloudy.
0840
Mix 150 Gals of great/air mix with 5 Gals of great. Pump
75 Gals with great until return. Crew moves stir platform
out of way. They will disconnect the T connection.
0945
Disconnect existing pitch end section. Trim pipe is placed into
pitch hole and some great/finsh mix is pumped in to cavity
to surface.
0950
Begin to use electric fish hammer to bore concrete around
wall.
1030
As crew begins to cut with fish below great the stop saw
clinch great on. They will try to use cutting torch.
1055
Begin to room. Crew stops operations until it passes.
1110
Continue with cutting with pipe.
1115
Having problems with cutting torch. Can is closing up site.
1155
Raymond Robinsonennis onsite to help show EDS crew how to
use torch.
1300
Dish up lunches onsite.
1305
Dish up lunches.
1350
Raymond dinning onsite.
1420
Crew is pick up site has been restored. Will send photos to
1428
L. Morgan.
1430
End of day.
### JOB SAFETY PLANNING MEETING

<table>
<thead>
<tr>
<th>Facility:</th>
<th>KSC</th>
<th>Specific Location:</th>
<th>LC-39A (LOX side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Number:</td>
<td>JERT011</td>
<td>Date:</td>
<td>2-3-15</td>
</tr>
</tbody>
</table>

#### Tasks to be performed:
- Remove bollard to clear access to well (if necessary).
- Set up planned water controls, as needed.
- Disassemble aboveground piping and remove well pump and riser.
- Abandon well in place with grout. Cap effluent pipe.
- Restore site to existing conditions.

#### Chemicals Used:

#### Dig Status:
(Dig Day or No Dig Day)

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### SAFETY TOPICS PRESENTED

#### Protective Clothing / Equipment:
- Level D+ Safety glasses, gloves, hard-hats, steel-toe boots, and ear plugs.

#### Chemical Hazards:
- LC-39A has land use controls for soil and groundwater contamination. See environmental comments on dig permit regarding environmental contamination concerns at this site.

#### Safety Plan to Avoid Chemicals / Hazards:
- Use Proper PPE. Wash hands before eating, drinking, smoking, and/or chewing.

#### Physical Hazards

<table>
<thead>
<tr>
<th>Physical Hazards</th>
<th>Plan for Safe Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects and wildlife</td>
<td>Watch where you place your hands and feet. Use repellent. Check yourself for ticks. Aware of alligator around waterways.</td>
</tr>
<tr>
<td>Slip, trip, falls</td>
<td>Awareness of potential hazards such as stick ups, uneven surfaces, etc. Use good housekeeping methods. Keep hoses, tools, tubing; etc. in an orderly fashion.</td>
</tr>
<tr>
<td>Pinch points</td>
<td>Recognize and avoid potential pinch points. Watch hand and body positioning. Never place hands, arms, legs, or body between two items being joined, a movable and an immovable object, or inside running equipment. Use proper PPE. Objects that may shift.</td>
</tr>
<tr>
<td>Muscle strains</td>
<td>Use proper bending/lifting techniques. Let equipment do as much lifting as possible. Use Buddy system. Get assistance with heavy lifts.</td>
</tr>
<tr>
<td>Noise</td>
<td>Use hearing protection when you must raise your voice to be heard and in designated areas. Hearing protection required whenever drill rig is in operation. Always watch out for pedestrians. Stop work if local tenants are in the area.</td>
</tr>
<tr>
<td>Hand and power tools</td>
<td>Proper training on tool use. Proper PPE. Awareness. Proper maintenance of equipment. If generator is required, use of GFCI is required. Ensure that guards are in place and functional.</td>
</tr>
<tr>
<td>Cuts and Scraps</td>
<td>Recognize and avoid. Awareness. Proper PPE.</td>
</tr>
<tr>
<td>Equipment Operations</td>
<td>Operators beware of pedestrians and surroundings. Make eye contact with operator prior entering work zones. Proper maintenance and inspections. Including those adjacent operations.</td>
</tr>
<tr>
<td>Vehicular traffic</td>
<td>Seatbelts use mandatory. Obey all speed limits and traffic control devices. Cell phone use prohibited while driving.</td>
</tr>
<tr>
<td>Heat stress</td>
<td>Take break as needed. Drink plenty of fluids. Cool down periods.</td>
</tr>
<tr>
<td>Underground utilities</td>
<td>Utilities locates have been obtained. Prior to installation of tooling, all sampling locations will be hand augured or post-holed to 5 ft. bgs.</td>
</tr>
<tr>
<td>Fueling Equipment</td>
<td>Use only fuel cans with spark arrestors. Shut-off equipment prior to fueling. No hot fueling equipment.</td>
</tr>
<tr>
<td>Pedestrians / Site Workers</td>
<td>During drilling operations ensure that other site workers are outside exclusion zones. Stop work if other personnel are near work area.</td>
</tr>
<tr>
<td>Changed Conditions</td>
<td></td>
</tr>
</tbody>
</table>
Since Last Shift

Emergency Procedures: Call (321) 867-7911. Stabilize victim(s) and await medical assistance.

Hospital/Clinic: Occupational Health Facility at KSC
Hospital Address: Southwest corner of “C” Avenue and 2nd Street
Special Equipment: Cutting torch, skid steer loader

Other: Rain/Lightning Chance:

Meeting conducted by Signature:

Signature Site Manager:

Location: LC-39A

Date: 2-3-15

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Signature</th>
<th>Sign In</th>
<th>Sign Out</th>
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<tbody>
<tr>
<td>Raymond Robinson</td>
<td>CORE</td>
<td></td>
<td>0700</td>
<td>1730</td>
</tr>
<tr>
<td>Chris Brown</td>
<td>EDS</td>
<td></td>
<td>0800</td>
<td>1730</td>
</tr>
<tr>
<td>Mitchel Peterson</td>
<td>EDS</td>
<td></td>
<td>0800</td>
<td>1730</td>
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<tr>
<td>Shawn Garcia</td>
<td>EDS</td>
<td></td>
<td>0800</td>
<td>1730</td>
</tr>
<tr>
<td>Philip Vo</td>
<td>NASA</td>
<td></td>
<td>08:15</td>
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<tr>
<td>Mark Peterson</td>
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<tr>
<td>John Miller</td>
<td>Jacobs</td>
<td></td>
<td>08:00</td>
<td>13:00</td>
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<tr>
<td>Dowling</td>
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<td>Rick Allen</td>
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<tr>
<td>Mike Deliz</td>
<td>NASA</td>
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**JOB SAFETY PLANNING MEETING**

<table>
<thead>
<tr>
<th>Job Number:</th>
<th>JERT011</th>
<th>Date:</th>
<th>02/04/15</th>
<th>Flight Crew Rescue Training Area</th>
</tr>
</thead>
</table>

**Tasks to be performed:**
- Abandon wells: grout-in-place.
- Cut aboveground finishings below grade.
- Remove concrete pads.
- Restore surface to match existing surroundings.

**Chemicals Used:**
- For Hand (cannot)

**Dig Status:**
- Dig Day

**SAFETY TOPICS PRESENTED**

**Protective Clothing/Equipment:**
- Level D+ Safety glasses, gloves, hard-hats, steel-toe boots, and ear plugs.

**Chemical Hazards:**
- Flight Crew Rescue Training Area site has been approved for No Further Action – no known contamination remains above regulatory cleanup criteria.

**Safety Plan to Avoid Chemicals/Hazards:**
- Use Proper PPE. Wash hands before eating, drinking, smoking, and/or chewing.

### Biological Hazards

<table>
<thead>
<tr>
<th>Biological Hazards</th>
<th>Plan for Safe Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects and wildlife</td>
<td>Watch where you place your hands and feet. Use repellent. Check yourself for ticks. Aware of alligator around waterways.</td>
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</tr>
<tr>
<td>Pinch points</td>
<td>Recognize and avoid potential pinch points. Watch hand and body positioning. Never place hands, arms, legs, or body between two items being joined, a movable and an immovable object, or inside running equipment. Use proper PPE. Objects that may shift.</td>
</tr>
<tr>
<td>Muscle strains</td>
<td>Use proper bending/lifting techniques. Let equipment do as much lifting as possible. Use Buddy system. Get assistance with heavy lifts.</td>
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<tr>
<td>Noise</td>
<td>Use hearing protection when you must raise your voice to be heard and in designated areas. Hearing protection required whenever drill rig is in operation. Always watch out for pedestrians. Stop work if local tenants are in the area.</td>
</tr>
<tr>
<td>Hand and power tools</td>
<td>Proper training on tool use. Proper PPE. Awareness. Proper maintenance of equipment. If generator is required, use of GFCI is required. Ensure that guards are in place and functional.</td>
</tr>
<tr>
<td>Cuts and Scrapes</td>
<td>Recognize and avoid. Awareness. Proper PPE.</td>
</tr>
<tr>
<td>Equipment Operations</td>
<td>Operators beware of pedestrians and surroundings. Make eye contact with operator prior entering work zones. Proper maintenance and inspections. Including those adjacent operations.</td>
</tr>
<tr>
<td>Vehicular traffic</td>
<td>Seatbelts use mandatory. Obey all speed limits and traffic control devices. Cell phone use prohibited while driving.</td>
</tr>
<tr>
<td>Heat stress</td>
<td>Take break as needed. Drink plenty of fluids. Cool down periods.</td>
</tr>
<tr>
<td>Underground utilities</td>
<td>Utilities locates have been obtained. Prior to installation of tooling, all sampling locations will be hand augured or post-holed to 5 ft. bgs.</td>
</tr>
<tr>
<td>Equipment</td>
<td>Use only fuel cans with spark arrestors. Shut-off equipment prior to fueling. No hot fueling equipment.</td>
</tr>
<tr>
<td>Pedestrians/Site Workers</td>
<td>During drilling operations ensure that other site workers are outside exclusion zones. Stop work if other personnel are near work area.</td>
</tr>
</tbody>
</table>

**Changed Conditions Since Last Shift**
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Signature</th>
<th>Sign In</th>
<th>Sign Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raymond Robinson</td>
<td>CORE</td>
<td>Raymond Robinson</td>
<td>07:00</td>
<td>10:30</td>
</tr>
<tr>
<td>Rick Allen</td>
<td>CORE</td>
<td></td>
<td>11:20</td>
<td>15:15</td>
</tr>
<tr>
<td>Glen Packer</td>
<td>E.D.S.</td>
<td>Glenn</td>
<td>07:30</td>
<td>10:30</td>
</tr>
<tr>
<td>Michael P.</td>
<td>E.D.S.</td>
<td>Matthew</td>
<td>11:45</td>
<td>15:15</td>
</tr>
<tr>
<td>Shawn Coipe</td>
<td>E.D.S.</td>
<td>Shawn Coipe</td>
<td>07:30</td>
<td>10:30</td>
</tr>
<tr>
<td>Romarc Emergency</td>
<td>NACA</td>
<td>Romarc</td>
<td>08:35</td>
<td>09:15</td>
</tr>
<tr>
<td>Tom Piane</td>
<td>IHA</td>
<td>Tom Piane</td>
<td>09:45</td>
<td>10:30</td>
</tr>
<tr>
<td>Minh Vo</td>
<td>NCA</td>
<td>Minh Vo</td>
<td>12:00</td>
<td>13:40</td>
</tr>
</tbody>
</table>
**JOB SAFETY PLANNING MEETING**

<table>
<thead>
<tr>
<th>Facility: KSC</th>
<th>Specific Location: LC-39A (LOX side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Number: JERT011</td>
<td>Date: 2/5/15</td>
</tr>
</tbody>
</table>

**Tasks to be performed:**
- Remove bollard to clear access to well (if necessary).
- Set up planned water controls, as needed.
- Disassemble aboveground piping and remove well pump and riser.
- Abandon well in place with grout. Cap effluent pipe.
- Restore site to existing conditions.

**Chemicals Used:**

**Dig Status:** (Dig Day or No Dig Day)

**SAFETY TOPICS PRESENTED**

**Protective Clothing/Equipment:**
Level D+ Safety glasses, gloves, hard-hats, steel-toe boots, and ear plugs.

**Chemical Hazards:**
LC-39A has land use controls for soil and groundwater contamination. See environmental comments on dig permit regarding environmental contamination concerns at this site.

**Safety Plan to Avoid Chemicals/Hazards:**
Use Proper PPE. Wash hands before eating, drinking, smoking, and/or chewing.

<table>
<thead>
<tr>
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</tr>
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<tbody>
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<tr>
<td>Changed Conditions</td>
<td></td>
</tr>
</tbody>
</table>
Since Last Shift

Emergency Procedures: Call (321) 867-7911. Stabilize victim(s) and await medical assistance.

Hospital/Clinic: Occupational Health Facility at KSC
Hospital Address: Southwest corner of “C” Avenue and 2nd Street

Special Equipment: Electric Shears to break up concrete, ground well hand.

Other: Rain/Lightning Chance: 69°F/55°F Win SSW 50% % a.m. 50% % p.m. 15%

Meeting conducted by Signature: Rick Allen

Signature Site Manager:  

Location:

<table>
<thead>
<tr>
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<th>Sign Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rick Allen</td>
<td>Coa</td>
<td></td>
<td>0630</td>
<td>1420</td>
</tr>
<tr>
<td>Nathan Fanning</td>
<td>E-DS</td>
<td>Nathan Fanning</td>
<td>0730</td>
<td>1420</td>
</tr>
<tr>
<td>Glen Pennington</td>
<td>ES</td>
<td>Glen Pennington</td>
<td>0730</td>
<td>1420</td>
</tr>
<tr>
<td>Pete Cripe</td>
<td>E.D.S.</td>
<td></td>
<td>0730</td>
<td>1420</td>
</tr>
<tr>
<td>Romeo Enriquez</td>
<td>NASA</td>
<td></td>
<td>1035</td>
<td>1045</td>
</tr>
<tr>
<td>David Robinson</td>
<td>Code</td>
<td></td>
<td>1155</td>
<td>1350</td>
</tr>
</tbody>
</table>
Planned Water Controls – LC-39A Artesian Well Abandonment

**Field Work Start:** 03 February 2015 (Tuesday)

**Estimated Duration:** 3-4 days

**Well Location:** LC-39A (LOX side)

**Anticipated Field Events:**

1. If necessary, remove bollard south of well to obtain clear access.
2. Set up planned water controls (see below for details).
3. Disassemble aboveground well piping and remove well pump and riser.
4. Install flange, reducer, and valve to well head and pump grout into well.
5. After allowing time for grout to set, open valve and check for flow. If no flow, remove well head and top off to surface with grout. Cap effluent pipe. If flowing, continue grouting until no flow conditions exist.
6. Restore site to existing conditions.

**Logistics/Coordination:**

- The artesian well is located in an area where other environmental remediation work is being completed and where an active transformer is situated. An air sparge trailer has just been installed adjacent to the well.
- The amount of water that will be discharged will be dependent on pressure within the well/water level heads. Water will be discharged when the aboveground assembly is dismantled and during pump/riser removal. Based on discussions with the driller, it is estimated that the well may flow for up to 2 hours. This is a very conservative estimate, as the driller indicated as it may only be ½-hour. The grouting process will halt artesian flow.
- Jacobs/CORE personnel met with Tetra Tech personnel on 22 January 2015 (Thursday) to discuss site remediation activities in the area and air sparge trailer installation/start-up. Tetra Tech is aware of the start date and anticipated flow of water.
- An on-site meeting was held on 28 January 2015 (Wednesday) to discuss field logistics and water control options. Survey measurements were also collected to identify natural drainage pathways in this area. Although the area is relatively flat in the area of the well, the collected measurements indicate that water would flow towards the drainage ditch south of the well if enough accumulates. However, it is understood that there is infrastructure in the area of the well in which we do not want water to accumulate near. A water control plan, by use of hay bales, was therefore proposed and agreed upon with the NASA RPM (see plan below).

**Planned Water Controls:**

1. Hay bales will be used for water control. The hay bales will be placed around/in the area of the artesian well to direct water away from the transformer and air sparge trailer and toward the drainage ditch south of the well. Stakes will be used to secure the hay bales.
2. A filter sock is already located in the drainage ditch for other work being completed in this area. It has been confirmed that this filter sock will still be in place during the time when abandonment activities are being completed. No additional controls are needed within the drainage ditch.
3. Best management practices will be employed to ensure that existing infrastructure is not compromised and the area is restored to existing conditions.

4. Site contacts will be notified if any problems are encountered during abandonment activities. Contacts included:

- NASA RPM: Dinh Vo, [redacted], [redacted], [redacted]
- Tetra Tech: Chris Hook, [redacted], [redacted] Chris Pike, [redacted], [redacted] or Chris Neumann
- SpaceX Facility Manager: Todd Ziegler [redacted]

Hay Bales set up to control/divert water
Permit Request: 17195 (Status: Approved)

You must schedule an Excavation Permit Inspector (EPI) to meet with you on site for the utility locate and to obtain the required signature on this permit.

**IMPORTANT**: Please call at least 72 hours prior to digging. The Excavator shall maintain an approved copy of this permit, signed by the EPI, on site at all times.

**Excavation Permit Inspectors (EPI):**

Jeff McDowell Phone: (321) 861-6869 Cell: (321) 749-4840
Ryan Ostarly Phone: (321) 861-6946 Cell: (321) 289-2372 FAX: (321) 861-6558

**IMPORTANT INFORMATION:**

- Excavation Permit Requests will be **immediately cancelled** should digging begin prior to approval from the EPI.
- Orange color paint is assigned to EPIs only unless maintaining the original paint markings.
- Utility Locate/Excavation Permit Requests will be **immediately cancelled** if original EPI paint markings are not maintained.
- You must **hand dig within 24 inches** in either direction of all EPI paint markings.
- **Do not remove or disturb thrust blocks.** A thrust block is a configured piece of concrete located underground at water and sewer utility piping to prevent movement from line pressure fluctuations. When excavating soil at location known to contain buried water or sewer lines, **do not remove any buried concrete without prior approval**.
- Maximum duration of time an EPR can remain in the approval status is one year. All work expecting to extend longer than one year must be re-submitted as a new request, including an updated map and scope of work.
- If the scope of work for the original Utility Locate/Excavation Permit Request is changed or the completion date needs to be extended, you are required to call 867-2406.
- When the job is complete, you are required to call 867-2406. **This permit will be closed upon expiration unless an extension is requested.**
- Accidental Utility line damage, excluding Gas main damage, shall call the ISC Duty Office at 861-5050.
- Accidental Gas Main damage shall call 911, evacuate the area and then call the ISC Duty Office.
- Category Code V Permits must call the ISC Duty office daily and observe all Critical-Days as directed by the ISC Duty Office.

**EPR Administrator:**

If you have any questions regarding your Utility Locate/Excavation Permit Request, please contact the EPR administrator at the following:

Phone: (321) 867-2406
Fax: (321) 867-1175
Email: KSC-ISC-DIGPERMIT@mail.nasa.gov
# Permit Request: 17195 (Status: Approved)

<table>
<thead>
<tr>
<th>Submitter's Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submitter First Name</strong></td>
</tr>
<tr>
<td><strong>Submitter Last Name</strong></td>
</tr>
<tr>
<td><strong>Submitter Email Address</strong></td>
</tr>
<tr>
<td><strong>Submitter Company Name</strong></td>
</tr>
<tr>
<td><strong>Submitter Phone</strong></td>
</tr>
<tr>
<td><strong>Submitter Fax</strong></td>
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<th>Technical Contact Information</th>
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<tr>
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<td><strong>Technical Contact Last Name</strong></td>
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<td><strong>Technical Contact Email Address</strong></td>
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<td><strong>Technical Contact Phone</strong></td>
</tr>
<tr>
<td><strong>Technical Contact Fax</strong></td>
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<tr>
<th>NASA COTR Contact Information</th>
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<tbody>
<tr>
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<td><strong>NASA COTR Last Name</strong></td>
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<td><strong>NASA COTR Email Address</strong></td>
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<td><strong>NASA COTR Phone</strong></td>
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<tr>
<td><strong>Permit Type</strong></td>
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<td><strong>Permit Status</strong></td>
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<tr>
<td><strong>Permit Start Date</strong></td>
</tr>
<tr>
<td><strong>Permit End Date</strong></td>
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<tr>
<td><strong>Estimated Completion Date</strong></td>
</tr>
<tr>
<td><strong>Scope of Work/Justification</strong></td>
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</table>

<table>
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<th>Facility Info</th>
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</table>


**Printing Permit Request:**

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<thead>
<tr>
<th>Facility</th>
<th>J8-1553</th>
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</thead>
<tbody>
<tr>
<td>Grid</td>
<td>J8</td>
</tr>
</tbody>
</table>

**Additional Forms and Identifying Numbers**

<table>
<thead>
<tr>
<th>Secondary Location</th>
<th>Work will be completed south of identified facility in earthen area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Check List Completed</td>
<td>No</td>
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</table>

**Category Codes**

| 1 | III |

**Related Documents**

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<thead>
<tr>
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<th>Description</th>
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**Reviews**

<table>
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<tr>
<th>Reviewed By:</th>
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<th>Results:</th>
<th>Comments:</th>
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</thead>
<tbody>
<tr>
<td>Locator</td>
<td>11/12/2014 11:33:07 AM</td>
<td>Agree</td>
<td>RO</td>
</tr>
<tr>
<td>Environmental</td>
<td>11/12/2014 12:02:35 PM</td>
<td>Agree</td>
<td>This project takes place in SWMU # 8 &quot;Launch Complex 39A&quot; with constraints against soil and groundwater usage, which may also affect the disposal options for the well pad. Abandoning and subsequent removal of this well MUST be coordinated with SpaceX prior to any earth or equipment disturbing activities within the confines of the LC39A pad perimeter fence. Contact Dihn Vo (NASA TA-A4B, 321-867-5964) to facilitate coordination. Prior to ANY soil disturbing activities in the area including removal of the well pad, contact NASA Project Remediation Manager Mike Deliz (TA-A4B, 321-867-6971) for specific guidance regarding handling of soil and/or groundwater from this location which will/may affect PPE and pad/material disposal options. All workers involved in subsurface work must be notified (HAZCOM) of the potential for contamination to be present and it is recommended that an Industrial Hygienist be consulted for determination of required personal protective equipment (PPE). For MESC contracts, contact MESC Industrial Hygiene (IH) for recommendations on personal protective equipment (PPE). MESC IH can be contacted at 321-867-2400 or at KSC-DL-EnvHealth/ (<a href="mailto:KSC-DL-EnvHealth@mail.nasa.gov">KSC-DL-EnvHealth@mail.nasa.gov</a>). If an animal burrow is observed under the well casing pad or within 25 feet of the well, please contact Becky Bolt (IHA-200, 321-867-7330) at least 14 days in advance of this planned abandonment/pad removal so that the burrow may be evaluated and tortoises relocated (if necessary). All disturbed soil must stay on site.</td>
</tr>
<tr>
<td>Master Planner</td>
<td>11/12/2014 7:49:24 AM</td>
<td>Agree</td>
<td>HF</td>
</tr>
<tr>
<td>Final</td>
<td>11/12/2014 12:45:32 PM</td>
<td>Agree</td>
<td>HF</td>
</tr>
<tr>
<td>Map associated with this request</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Printed on 11/20/2014 11:02 AM
Permit Request: 17195 (Status: Approved)

Approved by: Jeff McDowell

Approved by: Ryan Ostarly 12-8-14

Approved by:

Approved by:

Notes:

[] LOCATED AREA TO BE HAND EXCAVATED ONLY!

Locator's Signature: 

Reason for Hand Excavation: Congested AREA / UTILITY CONFLICTS
EXCAVATION PERMIT CATEGORIES:
If you have questions about assigned category codes contact the Excavation Permit Inspectors at 321-289-7829 or 321-749-4840. Remember - for permits with more than one category code, the most restrictive category code applies.

LAUNCH
For the latest launch, landing or test schedule, contact the ISC Duty Office at 321-861-5050.

<table>
<thead>
<tr>
<th>Category I</th>
<th>Old MILA Area</th>
<th>Communication Distribution and Switching Center - CD&amp;SC (M6-0138)</th>
<th>Operations &amp; Checkout O&amp;C (M6-0355)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launch Control Center - LCC (K6-0900)</td>
<td>Press Site (all buildings, roads, parking areas in and around the area.)</td>
<td>Payload Facility Supporting Launch (M7-0777, &amp; M7-0360)</td>
<td>Central Instrumentation Facility (M6-0342)</td>
</tr>
<tr>
<td>LC 39 A &amp; B (all areas and buildings inside the fence) &amp; all 6 Repeater Stations.</td>
<td>Banana River Repeater Station (M7-0531)</td>
<td>CCF - Converter Compressor Facility (K7-0468)</td>
<td>Shuttle Landing Facility - SLF (runway and all associated buildings and infrastructure)</td>
</tr>
<tr>
<td>VAB Repeater - VABR (K7-1193)</td>
<td>Tel IV &amp; South Repeater Station (N6-1118)</td>
<td>VAB (K6-0848) and VAB Utility Annex (K6-0947)</td>
<td></td>
</tr>
<tr>
<td>C-5 Substation (K6-1141)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 - Facilities (J7-0986, J7-1736, J8-2204, K6-1193, K7-0089, K7-0422, K7-0709, M7-0531, & N5-1118).
2 - Mission Specific - Including but not limited to these facilities. (M7-0777 - Transporter/Canister Facility, and M7-0360 - Space Station Processing Facility (SSPF)).

Excavation may resume at facilities 1-15 four hours after launch. Excavation will not occur at the SLF (16) until after landing.

Category II
LC-39 Active Pads - All excavation (except emergencies) will stop when the launch vehicle rolls out to the Pad. Excavation may resume following Pad safing and washdown after launch.

Category III
LC-39 Deactive Pads - Excavation will cease 2 hours before sunset on Launch -1 day, or 12 hours prior to Launch from Active Pad, whichever is earlier. Excavation may resume 4 hours after launch from the active pad.

Category IV
Excavation may proceed in all areas and times not covered by Categories I, II or III.

Category V
You must call the ISC Duty Office at 321-861-5050 DAILY prior to digging.

Air Force Launch Operations - Excavation and switching of critical power will cease on launch critical days (L-1, launch count to include launch day, and program specific test days) at the following KSC facilities and utilities:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy Parkway, NASA Parkways &amp; Saturn Causeway utility corridors</td>
<td>Tel IV &amp; South Repeater Station (N6-1118)</td>
</tr>
<tr>
<td>All Camera, Radar &amp; Weather Sites</td>
<td>Shuttle Landing Facility</td>
</tr>
<tr>
<td>Press Site (all buildings, roads, parking areas in and around the area)</td>
<td>Complex 41 (all facilities and areas inside the fence)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**LANDING**

For the latest launch, test or landing schedule, contact the ISC Duty Office at 321-861-5050.

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**Category VI**

Except for the SLF, excavation may proceed in all areas up to 2 hours prior to sunset on landing -1 day, or 12 hours prior to landing, whichever is earlier. Excavation may proceed at all facilities, except for the SLF, 1 hour after a successful landing. Excavation will stop at, around and/or involving the SLF and involved facilities, at the start of Launch Countdown. Excavation may proceed in this area after Landing, AND with approval from the SLF Operations at 867-2100.
HOT WORK PERMIT

Company Name: Code Engineering
Permit Number: 127-775
Date/Time Permit Issued: 12/8/14
Date Permit Expires: 1/8/15

Facility Number/Area: J8-1108 NASA "North West Corner" @ artisan well

Welding ☑️ Grinding ☑️ Torch ☐ CAD ☐ Other ☐

Supervisor/Operator's Name: Rick Allen
Phone Number: 721 704 3880

Permit Authorizing Individual: Tiffany 9 Andrews 704-689-9954

On-site inspection required by Permit Authorizing Individual before issuing permit.

1. Operator affirms they are properly trained to operate hot work equipment. YES ☑️ N/A ☐
2. Operator affirms hot work equipment has been inspected and is in safe operating condition. ☑️ ☐
3. Operator shall maintain good housekeeping practices throughout operation. ☑️ ☐
4. Fire Extinguishers shall comply with NFPA 10. Extinguishers shall be inspected daily prior to hot work, located within 20 feet of hot work site, and their use is understood. ☐ ☑️
   Type: ☑️ 10 lbs. ABC ☐ 2 1/2 gal. water ☐ 15 lbs. CO₂ ☐ other ☑️
5. Flammable liquids and gases shall be relocated a minimum distance 50 feet from hot work. ☑️ ☐
   If impractical to relocate, ensure they are safely protected or do not perform hot work. ☑️ ☐
6. Combustible materials shall be relocated a minimum distance of 35 feet from hot work. ☑️ ☐
   If impractical to relocate, ensure they are safely protected or do not perform hot work. ☑️ ☐
7. Operator shall ensure all hazardous dust, lint, and oily deposits are removed. ☑️ ☐
8. Operator shall visually inspect and ensure that all enclosures, chases, ducts, walls, floor openings and adjacent areas have been safely protected. ☑️ ☐
9. Operator shall ensure all equipment, containers, pipes, hoses have liquids drained, pressure released, vapors purged, gas valves shut off, etc. ☑️ ☐
10. Operator shall provide the appropriate safety barriers and warning signs as required. ☑️ ☐
11. Operator shall ensure detection systems (including HVAC) are safed, covered, or protected before hot work begins; and systems shall be restored to service daily. ☑️ ☐
12. Fire suppression systems shall remain operational (unless otherwise permitted). ☑️ ☐
13. No hot work in explosive or oxygen enriched atmospheres. Perform air sampling as required. ☑️ ☐
14. All fire watch personnel shall read and understand the requirements of this permit. Fire watch personnel shall be present throughout the hot work operation and 30 minutes after completion. ☑️ ☐
   If evacuation is required, report hot work operations to Fire Incident Commander. ☑️ ☐
15. All Hot Work shall stop 24 hrs before scheduled launch and not resume until 8 hrs after launch. ☑️ ☐
16. For New Construction or Demolition: A pre-task briefing shall be conducted at the beginning of any hot work task. Hot work operators and fire watches shall be present and the contents of this permit and potential hazards shall be addressed.

In the event of FIRE OR EMERGENCY call 911 or cell phone - 321-867-7911.
For permit renewal call the Duty Office at 861-5050.

Additional Comments
Please cover grass in work area or have water supply on-hand while computing work.

(Note #1): If Operator cannot complete work, all new operators shall read and initial next to appropriate boxes and sign this checklist below, indicating full understanding of safety procedures and requirements.

Alternate Operator Signature: 
Date: 
Alternate Operator Signature: 
Date: 


KSC FORM 2-271V2 (REV. 09/12) PREVIOUS EDITIONS ARE OBSOLETE
HOT WORK PERMIT
Permit Shall Not Exceed 30 Days

Company Name: LAKE ENGR.
Permit Number: 128279
Date/Time Permit Issued: 1-8-15
Date Permit Expires: 2-8-15

Facility/Area: PAD 39 A @ ARTESION WELL

Operator's Name (See Note #1): Raymond Robinson
Phone Number: 407-467-7477

Welding □ Grinding □ Torch □ CAD
Other □

Operator's Signature:

Permit Authorizing Individual: NATE
Name and Phone Number: 321-289-8324

On-site inspection required by Permit Authorizing Individual before issuing permit.

1. Operator affirms they are properly trained to operate hot work equipment.

2. Operator affirms hot work equipment has been inspected and is in safe operating condition.

3. Operator shall maintain good housekeeping practices throughout operation.

4. Fire Extinguishers shall comply with NFPA 10. Extinguishers shall be inspected daily prior to hot work. Located within 20 feet of hot work site, and their use is understood.
   Type: 10 lbs. ABC □ 2 1/2 gal. water □ 15 lbs. CO2. □ Other: fire.

5. Flammable liquids and gases shall be relocated a minimum distance 50 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.

6. Combustible materials shall be relocated a minimum distance of 35 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.

7. Operator shall ensure all hazardous dust, lint, and oily deposits are removed.

8. Operator shall visually inspect and ensure that all enclosures, chases, ducts, walls, floor openings and adjacent areas have been safely protected.

9. Operator shall ensure all equipment, containers, pipes, hoses have liquids drained, pressure released, vapors purged, gas valves shut off, etc.

10. Operator shall provide the appropriate safety barriers and warning signs as required.

11. Operator shall ensure detection systems (including HVAC) are safed, covered, or protected before hot work begins; and systems shall be restored to service daily.

12. Fire suppression systems shall remain operational (unless otherwise permitted).

13. No hot work in explosive or oxygen enriched atmospheres. Perform air sampling as required.

14. All fire watch personnel shall read and understand the requirements of this permit. Fire watch personnel shall be present throughout the hot work operation and 30 minutes after completion. If evacuation is required, report hot work operations to Fire Incident Commander.

15. All Hot Work shall stop 24 hrs before scheduled launch and not resume until 8 hrs after launch.

16. For New Construction or Demolition: A pre-task briefing shall be conducted at the beginning of any hot work task. Hot work operators and fire watches shall be present and the contents of this permit and potential hazards shall be addressed.

   In the event of FIRE OR EMERGENCY call 911 or cell phone - 321-867-7911.
   For permit renewal call the Duty Office at 861-5050.

Additional Comments:

(Note #1): If Operator cannot complete work, all new operators shall read and initial next to appropriate boxes and sign this checklist below, indicating full understanding of safety procedures and requirements.

Alternate Operator Signature: Calling well
Date: 3-8-15
Alternate Operator Signature: 
Date: 3-8-15


KSC FORM 2-271V2 (REV. 09/12) PREVIOUS EDITIONS ARE OBSOLETE
HOT WORK PERMIT
Permit Shall Not Exceed 30 Days

Company Name: 
Permit Number: 128915
Date/Time Permit Issued: 2-9-15
Date Permit Expires: 3-9-15

Facility Number/Area: JF-1705 PADA Lox Area
Supervisor/Operator's Name (See Note #1): Rick Allen
Phone Number: 321 704 3880

☐ Welding ☐ Grinding ☐ Torch ☐ CAD
☒ Other

Supervisor/Operator's Signature: 
Permit Authorizing Individual: Name and Phone Number: 321-289-0324

On-site inspection required by Permit Authorizing Individual before issuing permit.

1. Operator affirms they are properly trained to operate hot work equipment.
2. Operator affirms hot work equipment has been inspected and is in safe operating condition.
3. Operator shall maintain good housekeeping practices throughout operation.
4. Fire Extinguishers shall comply with NFPA 10. Extinguishers shall be inspected daily prior to hot work, located within 20 feet of hot work site, and their use is understood:
   Type: ☐ 10 lbs. ABC ☐ 2 1/2 gal. water ☐ 15 lbs. CO2 ☐ other 2 ABC
5. Flammable liquids and gases shall be relocated a minimum distance 50 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.
6. Combustible materials shall be relocated a minimum distance of 35 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.
7. Operator shall ensure all hazardous dust, lint, and oily deposits are removed.
8. Operator shall visually inspect and ensure that all enclosures, chases, ducts, walls, floor openings and adjacent areas have been safely protected.
9. Operator shall ensure all equipment, containers, pipes, hoses have liquids drained, pressure released, vapors purged, gas valves shut off, etc.
10. Operator shall provide the appropriate safety barriers and warning signs as required.
11. Operator shall ensure detection systems (including HVAC) are safed, covered, or protected before hot work begins; and systems shall be restored to service daily.
12. Fire suppression systems shall remain operational (unless otherwise permitted).
13. No hot work in explosive or oxygen enriched atmospheres. Perform air sampling as required.
14. All fire watch personnel shall read and understand the requirements of this permit. Fire watch personnel shall be present throughout the hot work operation and 30 minutes after completion. If evacuation is required, report hot work operations to Fire Incident Commander.
15. All Hot Work shall stop 24 hrs before scheduled launch and not resume until 8 hrs after launch.
16. For New Construction or Demolition: A pre-task briefing shall be conducted at the beginning of any hot work task. Hot work operators and fire watches shall be present and the contents of this permit and potential hazards shall be addressed.

In the event of FIRE OR EMERGENCY call 911 or cell phone - 321-867-7911.
For permit renewal call the Duty Office at 861-5050.

Additional Comments:

(Note #1): If Operator cannot complete work, all new operators shall read and initial next to appropriate boxes and sign this checklist below, indicating full understanding of safety procedures and requirements.

Alternate Operator Signature: 
Date: 
Alternate Operator Signature: 
Date:


KSC FORM 2-271V2 (REV. 09/12) PREVIOUS EDITIONS ARE OBSOLETE
PAYMENT RECEIPT

Dominion Metals Cocoa
445 Canaveral Groves Blvd
Cocoa Beach, FL 32926
321-735-4940

Receipt: 0219663  Date: 02/03/2015
Customer: 12672  Time: 14:35

CORE ENGINEERING
MARK PETRUZZELLO
210 COVE LOOP DRIVE
MERRITT ISLAND, FL 32953

Driver's License: P982-660-73-211-0  FL

Ticket: 258897  Weigh In: 02/03/2015  14:22
Operator: 2  Weigh Out: 02/03/2015  14:31
Description: Truck 1 person

All weights in pounds. M indicates manual weight

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Gross</th>
<th>Tare</th>
<th>Net</th>
<th>Price</th>
<th>TOTAL $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>6320</td>
<td>5320</td>
<td>1000</td>
<td>5.000/CW</td>
<td>$50.00</td>
</tr>
</tbody>
</table>

Ticket Total $50.00

# of Tickets: 1  Paid by CHECK 7386  Total Paid $50.00

Note: This receipt is for 258897. Any person, who knowingly gives false indication of ownership or attempts to alter or deface this receipt, is guilty of the crime of forgery, a violation of the Florida Statutes, punishable by fine or imprisonment for a term not to exceed 5 years or a fine not to exceed $5,000 or both.
STATE OF FLORIDA WELL COMPLETION REPORT

Southwest
Northwest
St. Johns River
South Florida
Suwannee River
DEP
Delegated Authority (If Applicable)

1. Permit Number 140159-1 *CUP/MUP Number 2-009-50054-2 *DID Number 35273 62-524 Delineation No.

2. Number of permitted wells constructed, repaired, or abandoned 1 Number of permitted wells not constructed, repaired, or abandoned 0

3. Owner's Name NASA

4. Completion Date 2/5/15 5. Florida Unique ID

6. Well Location - Address, Road Name or Number, City, ZIP

7. County BREVARD *Section 3 Land Grant *Township 225 *Range 37E

8. Latitude 283637.512144 Longitude 803630.04776

9. Latitude Datum: NAD 27 X NAD 83 WGS 84

10. Type of Work: Construction Repair Modification Abandonment

11. Specified Intended Use(s) of Well(s)

12. Drill Method: Auger Cable Tool Rotary Combination (Two or More Methods) Jetted Sonic

13. Measured Static Water Level ft. Measured Pumping Water Level ft. After Hours at GPM

14. Measuring Point (Describe): Which is ft. Above Below Land Surface Flowing Yes No

15. Casing Material: Black Steel Galvanized PVC Stainless Steel Not Cased Other

16. Total Well Depth ft. Cased Depth ft. Open Hole From To ft. Screen From To ft. Slot Size

17. Abandonment: Other (Explain) NO LONGER IN USE

18. Surface Casing Diameter and Depth:

19. Primary Casing Diameter and Depth:

20. Liner Casing Diameter and Depth:

21. Telescope Casing Diameter and Depth:

22. Pump Type (If Known):

23. Chemical Analysis (When Required):

24. Water Well Contractor:

*Contractor's Signature

(Date Stamp)

Official Use Only

DEP Form 62-532.900(2) Incorporated in 62-522.410, F.A.C. Effective Date: October 7, 2010
**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT**
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMDD.STATE.FL.US

**ST. JOHNS RIVER WATER MANAGEMENT DISTRICT**
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMDD.COM

**NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT**
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NNFWWMDD.STATE.FL.US

---

**DRILL CUTTINGS LOG**
(Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

<table>
<thead>
<tr>
<th>From ft.</th>
<th>To ft.</th>
<th>Color</th>
<th>Grain Size (F, M, C)</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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Comments: ***** SITE MAP ATTACHED *****

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**Detailed Site Map of Well Location**

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DEP Form 62-532.300(2)  Incorporated in 62-532.410, F.A.C. Effective Date: October 7, 2010
**STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL**

- **Southwest**
- **Northwest**
- **St. Johns River**
- **South Florida**
- **Suwannee River**
- **DEP**
- **Delegated Authority (If Applicable)**

*Denotes Required Fields Where Applicable*

The water well contractor is responsible for completing the form and forwarding the permit application to the appropriate delegated authority where applicable.

---

**1. NASA**

<table>
<thead>
<tr>
<th>Mail Code TA-A4B</th>
<th>Orlando</th>
<th>FL</th>
<th>32899-0001</th>
<th>3218687415</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>City</td>
<td>73</td>
<td>Telephone Number</td>
<td>3218687415</td>
</tr>
</tbody>
</table>

**2. LC39A, KENNEDY SPACE CENTER, FL**

*Well Location – Address, Road Name or Number, City*

**3. None, US Govt Owned**

*Parcel ID No. (PIN) or Alternate Key (Circle One)*

**4. 3 225 37E**

*Brevard County*

**5. Douglas A Leonhardt**

*Water Well Contractor*

<table>
<thead>
<tr>
<th>40729563532</th>
<th>To Orlando</th>
<th>FL</th>
<th>32811-1740</th>
<th>3218687415</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone Number</td>
<td>E-mail Address</td>
<td>32811-1740</td>
<td>3218687415</td>
<td></td>
</tr>
</tbody>
</table>

**6. 4712 Old Winter Garden Rd**

*Water Well Contractor's Address*

**7. Type of Work:**

<table>
<thead>
<tr>
<th>Construction</th>
<th>Repair</th>
<th>Modification</th>
<th>Abandonment</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO LONGER IN USE</td>
<td>Reason for Repair, Modification, or Abandonment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**8. Number of Proposed Wells:** 1

**9. Specify Intended Use(s) of Well(s):**

<table>
<thead>
<tr>
<th>Domestic</th>
<th>Agricultural</th>
<th>Site Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational Area</td>
<td>Irrigation</td>
<td>Monitoring</td>
</tr>
<tr>
<td>Public Water Supply (Limited Use/DOH)</td>
<td>Nursery Irrigation</td>
<td>Test</td>
</tr>
<tr>
<td>Public Water Supply (Community or Non-Community/DEP)</td>
<td>Commercial/Industrial</td>
<td>Earth-Coupled Geothermal</td>
</tr>
<tr>
<td>Golf Course Irrigation</td>
<td>Aquifer Storage and Recovery</td>
<td>HVAC Supply</td>
</tr>
<tr>
<td>Class I Injection</td>
<td>Other (describe)</td>
<td>HVAC Return</td>
</tr>
</tbody>
</table>

**10. Distance from Septic System if ≤ 200 ft:**

11. Facility Description: SHUTTLE LAUNCH COMPLEX

**12. Estimated Start Date:** 12/08/2014

**13. Estimated Well Depth:** 380 ft

**14. Estimated Screen Interval:** From To ft

**15. Primary Casing Material:**

<table>
<thead>
<tr>
<th>X Black Steel</th>
<th>Galvanized PVC</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Cased</td>
<td>Other:</td>
<td></td>
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</tbody>
</table>

**16. Secondary Casing:**

<table>
<thead>
<tr>
<th>Telescope Casing</th>
<th>Liner</th>
<th>Surface Casing</th>
<th>Diameter</th>
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</thead>
<tbody>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td>0 in</td>
</tr>
</tbody>
</table>

**18. Method of Construction, Repair, or Abandonment:**

<table>
<thead>
<tr>
<th>Auger Cable Tool</th>
<th>Jetted</th>
<th>Rotary Sonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination (Two or More Methods)</td>
<td>Hand Driven (Well Point, Sand Point)</td>
<td>Hydraulic Point (Direct Push)</td>
</tr>
<tr>
<td>X Other (describe): PRESSURE GROUT</td>
<td></td>
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</table>

**19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:**

<table>
<thead>
<tr>
<th>From To</th>
<th>0</th>
<th>380</th>
<th>Seal Material</th>
<th>Bentonite</th>
<th>X</th>
<th>Seal Cement</th>
<th>Other</th>
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**20. Indicate total number of existing wells on site:** 1

**21. 'Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application?**

**22. Latitude:** 28°36′37″.512144″

**Longitude:** 80°36′30″.04776″

**23. Data Obtained From:**

<table>
<thead>
<tr>
<th>GPS</th>
<th>Map</th>
<th>Survey</th>
</tr>
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</table>

**24. Approval Granted By:**

<table>
<thead>
<tr>
<th>Douglas A Leonhardt</th>
</tr>
</thead>
<tbody>
<tr>
<td>License No: 2406</td>
</tr>
</tbody>
</table>

**Signature of Contractor:**

<table>
<thead>
<tr>
<th>NASA</th>
<th>Signature of Owner or Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date: 11/20/2014</td>
</tr>
</tbody>
</table>

**DEP Form:** 62-532.900(1) Incorporated in 62-532.400(1), F.A.C. Effective Date: October 7, 2010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMDDSTATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMDD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMDDSTATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

*General Site Map of Proposed Well Location

Identify known roads and landmarks. Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources, if applicable.
"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 140159-1
NASA
DATE ISSUED: November 25, 2014

1. The well contractor shall notify the District no less than 24 hours prior to initiating construction, repair, abandonment, or grouting operations. The District representative for this permit is:

   Jason Sirois
   (321) 409-2122 - work
   (321) 689-7914 - cell
   jsirois@sjnwd.com

2. The well contractor shall remove all obstructions from the well casing and borehole and pressure inject Portland cement grout from the bottom to the top of the well using the tremie method. Changes to this abandonment plan are not authorized unless approved in advance by the District.

3. The well contractor shall clearly label all compliance submittals required as a condition of this permit with the well permit number, District well ID number, and CUP number (if applicable).

4. The well contractor shall post a copy of this permit on-site during all phases of well construction, repair, or abandonment.

5. The well contractor shall implement all control measures necessary to prevent off-site movement of drilling fluids that violate water quality standards set forth in Chapter 62-302, F.A.C.

6. The well contractor shall submit to the District a Well Completion Report in a District-approved format within 30 days of the completion of the construction, repair, or abandonment authorized by this permit.

7. The well owner shall provide District staff access to the well site during all phases of well construction, repair, or abandonment.

8. Issuance of this permit does not relieve the well owner of obtaining any necessary federal, state, local or special District permits or authorizations.

9. The well owner shall obtain District approval of grouting prior to cutting off and burying the plugged well casing.