A low density material **411** such as a viscous gel, lightweight cement, or a thermally degradable low density polymer is pumped through drill string **401** into slotted liner **130**. Due to the density balancing, low density material **411** is properly emplaced in the wellbore without needing a mechanical isolation device. In one embodiment, low density material **411** is balanced through density adjustment against the weight of the drilling fluid and sets up to a high strength material. The balanced low density material **411** pumped into liner **130** is designed to float at a desired depth and exit through the slots **107** at the desired depth into the annulus. Slots or perforations **107** in liner **130** may need to be enlarged to a proper size to allow adequate circulation of material **411** behind liner **130** and up the annulus between the wellbore and liner **130**.

FIG. **4**B illustrates an exemplary process for cementing behind a liner, according to one embodiment. Cement **412** is pumped into drill string **401** and sits above the low density material **411** that is already in place. Cement **412** is circulated up the annulus and wellbore to seal the liner slots or perforations **107** in the target zone.

FIG. **4**C illustrates a schematic view of a drilled out well, according to one embodiment. Cement **412** and low density material **411** occupying inside of liner **130** are drilled out and cleaned from inside liner **130**. It leaves a hole clean ready for stimulation, injection, or production while filling cracks in permeable zones **125** behind liner **130**. Well **100** is ready for flowing with no contribution from the upper, undesirable zones contributing cooler water to a geothermal production well, or water to an oil or as production well.

FIG. **4**D illustrates a schematic view of a drilled out well after a thermally degradable material is degraded, according to one embodiment. In this case, low density material **411** is a thermally degradable material. Due to the temperature in the zone, thermally degradable material was degraded, and cement **412** is left to seal behind liner **130** and protects permeable zone **125**.

FIG. **5**A illustrates an exemplary circulation path of an injected fluid to surface, according to one embodiment. The circulation path is established in a geothermal well behind the slotted liner and a particulate, thermally degrading solid is injected. The material circulates behind the liner to enter and fill and cracks or permeable zones behind the liner.

FIG. **5**B illustrates an exemplary circulation path of an injected fluid to permeable zones, according to one embodiment. The particulate solid is displaced with water to three it into the annulus behind liner **130** and into the cracks, fractures or permeable zones **125**.

FIG. **5**C illustrates an exemplary circulation path of a particulate material injected into a slotted liner, according to one embodiment. The particulate material degrades in high temperature zones and leaves them open for flow or injection. The particulate material **501** remains in place in low temperature zones, blocking them from now or injection. The geothermal well produces only high temperature fluids or injects into only high temperature zones.

Embodiments as described herein have significant advantages over previously developed implementations. As will be apparent to one of ordinary skill in the art, other similar apparatus arrangements are possible within the general scope. The embodiments described above are intended to be exemplary rather than limiting, and the bounds should be determined from the claims.

What is claimed is:

1. A method comprising:

injecting a thermally degradable material at a desired depth into a liner having a plurality of openings, wherein the liner is suspended below a cemented casing in a wellbore of a well in a subterranean formation, wherein the thermally degradable material has a density about equal to or less than a density of fluid in the wellbore, and wherein the thermally degradable material extrudes through a lower portion of the liner into an annulus between the liner and the wellbore to plug an open hole interval of the well, wherein the thermally degradable material does not flow downward into a deeper part of the well; and

circulating a cement into the liner above the thermally degradable material, wherein the cement extrudes through an upper portion of the liner into the annulus between the liner and the wellbore, displacing water from the wellbore and forming a solid cemented casing string, and wherein the cement is kept from sinking down the annulus between the liner and wellbore and separated from the deeper part of the well by the thermally degradable material.

2. The method of claim **1**, further comprising removing the cement and the thermally degradable material inside of the liner.

3. The method of claim **1**, wherein the thermally degradable material includes one or more of,

(a) a thermally degradable cement,

(b) a thermally degradable foamed cement;

(c) a thermally degradable particulate material, and

(d) a thermally degradable polymer including foamed polymer resin beads.

4. The method of claim **1**, wherein the thermally degradable material is injected into the liner over an isolation device.

5. The method of claim **4**, wherein the isolation device is one of a drillable packer, a cementing basket, and a bridge plug.

6. The method of claim **1**, wherein the thermally degradable material is balanced against the weight of the fluid in the wellbore.

7. The method of claim **1**, wherein the thermally degradable material degrades thermally and is removed from the wellbore as a liquid or as a solute in a wellbore.

8. The method of claim **1**, wherein the solid cemented casing string protects a permeable zone from fracturing during subsequent injection of the well.

9. The method of claim **1**, where the cement used is foamed to increase an upward movement and penetration into the annulus between the liner and the wellbore and to reduce a downward flow of the cement into the wellbore that is capable of damaging a desirable permeable zone.

10. The method of claim **1**, where the thermally degradable material is a foamed cement that degrades thermally, and wherein the foamed cement is one or more of a calcium aluminum cement, ammonium magnesium phosphate sorel cement, magnesium phosphate sorel cement or magnesium potassium phosphate sorel cement.

11. The method of claim **1**, where the openings are enlarged with a perforating gun to improve circulation of the thermally degradable material and the cement out into the annulus.

12. The method of claim **1**, wherein the plurality of openings include one or more of slots, perforations, and mesh.

13. The method of claim **1**, where the liner is a well screen.