

**ATTACHMENT - Timothy Parker, letter to John Farrow,  
re Groundwater Impacts from Increased Pumping to  
Support Ord Community Development, February 15, 2018**

February 15, 2018

John Farrow  
M.R. Wolfe & Associates, P.C  
555 Sutter Street, Suite 405  
San Francisco, CA 94102

**Re: Groundwater Impacts from Increased Pumping to Support Ord Community Development**

Dear Mr. Farrow:

At your request, I have reviewed the Draft Initial Study/Negative Declaration for the Ord Community Sphere of Influence Amendment and Annexation together with the documents cited below. As set out in the discussion below, increased pumping to support new development in the Ord Community would aggravate existing seawater intrusion and further deplete the Deep Aquifer. The reported existence of an area of relatively fresher water in what Marina Coast Water District terms the North Marina Area does not change this conclusion. My resume is attached.

**1. Increased pumping for new development in the Ord community would aggravate seawater intrusion and further deplete the Deep Aquifer.**

As explained in my October 8, 2016 memorandum regarding the proposal to increase groundwater pumping to support the Monterey Downs project in the Ord community, seawater intrusion continues in the Salinas Valley Groundwater Basin (SVGB) due to overdraft conditions, despite various groundwater management projects.<sup>1</sup> The situation has not improved since my 2016 memorandum. The most recent MCWRA mapping shows continued substantial increase in seawater intruded areas, which have occurred *despite* reductions in MCWD pumping during the 2006-2015 period.<sup>2</sup> Groundwater levels continue

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<sup>1</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016.

<sup>2</sup> MCWRA, Historic Seawater Intrusion Map, Pressure 400-Foot Aquifer, June 7, 2017, available at <http://www.co.monterey.ca.us/home/showdocument?id=19378>; MCWRA, Historic Seawater Intrusion Map, Pressure 180-Foot Aquifer, June 7, 2017, available at <http://www.co.monterey.ca.us/home/showdocument?id=19376>; MCWD, 2015 Urban Water Management Plan (UWMP), Table 4.1 (reporting total MCWD pumping declined from 4,295 afy to 3,228 afy in that period), available at [http://www.mcwd.org/docs/engr\\_files/MCWD\\_2015\\_UWMP\\_Final.pdf](http://www.mcwd.org/docs/engr_files/MCWD_2015_UWMP_Final.pdf).

to decline, especially in the 400-foot aquifer.<sup>3</sup> MCWRA reports that acreage within the 500 mg/l or greater Chloride contour in the 400-foot aquifer has increased from 11,882 acres in 2005 to 17,125 acres in 2015.<sup>4</sup> Furthermore, because increases in intrusion may lag periods of drought, there may be substantial increases in intrusion still to come in response to the recent 4-year drought.<sup>5</sup>

In light of the continuing advance of seawater intrusion, MCWRA staff have recommended a moratorium on new wells in the Pressure 400-Foot Aquifer within an “Area of Impact” proximate to the 500 mg/l Chloride front.<sup>6</sup> MCWRA also recommends a moratorium on new wells within the entirety of the Deep Aquifers of the 180/400 Foot Aquifer Subbasin pending investigation of its viability as a source of water (“Deep Aquifer” has been called variously including the 900-foot Aquifer, and herein is used to refer to multiple water-bearing units underlying the Pressure 400-Foot Aquifer).<sup>7</sup>

In sum, as set out in my 2016 memorandum and confirmed by subsequent investigations, future increased groundwater pumping above existing levels, particularly from the areas proximate to the seawater intrusion front, will contribute to seawater intrusion. Because MCWD’s current production wells serving the Ord community are located just inland of the seawater intrusion front in the 400-foot and Deep aquifers, increased pumping would aggravate seawater intrusion.<sup>8</sup>

MCWD has reported that its total pumping is a small fraction of total SVGB pumping.<sup>9</sup> As I explained in my 2016 memorandum, the relevant question for assessing the cumulative impact of additional pumping is not whether that amount is large compared to total SVGB pumping, but whether it represents a considerable increase in the magnitude of annual overdraft.<sup>10</sup> An increase of 2,492 afy to meet the projected increase in Ord community

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<sup>3</sup> MCWRA, presentation of Groundwater Level Contours And Seawater Intrusion Maps, July 13, 2017, available at <http://www.co.monterey.ca.us/home/showdocument?id=31294>.

<sup>4</sup> *Id.*

<sup>5</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 2-3.

<sup>6</sup> MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017, pp. 2-9, available at <http://www.co.monterey.ca.us/home/showdocument?id=57394>.

<sup>7</sup> *Id.*

<sup>8</sup> MCWD, 2015 Urban Water Management Plan (UWMP), pp. 35, 45, available at [http://www.mcwd.org/docs/engr\\_files/MCWD\\_2015\\_UWMP\\_Final.pdf](http://www.mcwd.org/docs/engr_files/MCWD_2015_UWMP_Final.pdf).

<sup>9</sup> MCWD, 2015 UWMP, p. 38; MCWD, Draft Initial Study/Negative Declaration, Ord Community Sphere of Influence Amendment and Annexation (Annexation Initial Study), p. 49.

<sup>10</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 19-20.

demand from 2020 to 2035<sup>11</sup> would be a considerable increase in the existing 12,000 afy to 19,000 afy overdraft of the Pressure Subarea. And that pumping would make a considerable contribution to the existing seawater intrusion problem.

The Deep Aquifer contains ancient water and there is no evidence that it is recharged except incidentally by leakage from overlying aquifers and via well-perforations completed in both the Deep and shallower aquifers, so any pumping from the Deep aquifer is groundwater mining.<sup>12</sup> In addition, any increase in pumping from the Deep Aquifer will likely induce increased seawater intrusion in the overlying 180- and 400-foot aquifers through leakage.<sup>13</sup> Any increase in pumping would simply lead to further depletion of this resource. As noted, MCWRA has recently recommended a moratorium on new pumping from the Deep Aquifer.

**2. The reported existence of an area of relatively fresh water behind the seawater intrusion front does not alter the conclusion that increased pumping will contribute to seawater intrusion.**

In connection with its opposition to the proposed location of the source water wells for the proposed California-America Water Company desalination plant, MCWD has engaged hydrologist Curtis Hopkins to evaluate water quality data from the test well for that project.<sup>14</sup> MCWD has also recently arranged for the collection and analysis of airborne electromagnetic (AEM) data to characterize the aquifer in an area that MCWD identifies as the North Marina Area of the Salinas Valley Groundwater Basin.<sup>15</sup> These analyses disclose the presence of some areas of relatively fresher water located north of, i.e, behind, the seawater intrusion front.<sup>16</sup>

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<sup>11</sup> MCWD, Annexation Initial Study, p. 50

<sup>12</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 14-17; MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017, p. 54.

<sup>13</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 14-14; MCWD, 2015 UWMP, p. 50, citing WRIME, Deep Aquifer Investigative Study, 2003; MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017, p. 54.

<sup>14</sup> Curtis Hopkins, North Marina Area Groundwater Data and Conditions, May 26, 2015, provided as Appendix E, pp. E-15 to E-50, of the MCWD, 2015 UWMP, available at

[http://www.mcwd.org/docs/engr\\_files/MCWD%202015%20UWMP%20Appendices\\_Final.pdf](http://www.mcwd.org/docs/engr_files/MCWD%202015%20UWMP%20Appendices_Final.pdf).

<sup>15</sup> Ian Gottschalk and Rosemary Knight, Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District, June 16, 2017.

<sup>16</sup> That water is not freshwater in the sense of being potable, because it does not meet the 500 mg/l chloride drinking water standards. MCWD's consultants characterize it as freshwater because it meets a 3,000 mg/l TDS threshold, but its

In its response to my 2016 memorandum submitted by LandWatch in connection with the Monterey Downs project EIR, MCWD has previously argued that Curtis Hopkins' analysis indicates that "beneficial conditions have developed (or have always existed) in the North Marina Area of the 180-400 Foot Aquifer Subbasin and may be contrary to information published by the Monterey County Water Resources Agency (MCWRA)."<sup>17</sup> MCWD states that, because of this new information about "favorable groundwater conditions within the North Marina Area," its 2015 Urban Water Management Plan (UWMP) reflects a much different understanding of groundwater conditions than its 2010 UWMP.<sup>18</sup>

As noted, seawater intrusion will continue to occur in the SVGB for the foreseeable future because continued overdraft conditions preclude protective elevations. However, MCWD argues that findings by its consultant Hopkins contained in the 2015 UWMP contradict my conclusion with respect to seawater intrusion "*at least as applied to the North Marina Area.*"<sup>19</sup>

But MCWD does not pump groundwater from the North Marina Area behind the MCWRA-mapped seawater intrusion front; its wells are located inland of the seawater intrusion front.<sup>20</sup> Furthermore, the reported area of fresher water in the North Marina Area is not in fact potable.<sup>21</sup> The UWMP admits with respect to the fresher water area behind the seawater intrusion front in the North Marina Area, "[f]uture use of this area for a potable groundwater supply may be unlikely; however, these conditions do show a retardation of seawater intrusion in these shallower aquifer zones in this coastal portion of the Salinas Valley Groundwater Basin, which provides some protection for inland uses of the 180-ft Aquifer."<sup>22</sup>

Despite the UWMP claim that the fresher water area in the North Marina Area provides some protection for inland uses of the 180-ft Aquifer, the 2015 UWMP does not dispute that seawater intrusion is a continuing problem caused by overdraft of the SVGB.<sup>23</sup> The UWMP acknowledges that the seawater intrusion front continues to advance inland, that this has required the historic relocation and deepening of MCWD wells, and that it continues to

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chloride levels exceed 1,000 mg/l in the study area. See Hydrological Working Group, Memorandum Responding To Comments On HWG Hydrogeologic Investigation Technical Report, January 4, 2018, pp. 3-4.

<sup>17</sup> MCWD, Response to Timothy Parker Technical Memorandum Dated October 8, 2016, p. 5.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*, p. 6, emphasis added

<sup>20</sup> MCWD, 2015 UWMP, pp. 35, 45.

<sup>21</sup> Hydrological Working Group, Memorandum Responding To Comments On HWG Hydrogeologic Investigation Technical Report, January 4, 2018, pp. 3-4.

<sup>22</sup> MCWD, 2015 UWMP, p. 48.

<sup>23</sup> *Id.*, pp. 38, 43-45, 54-55

threaten its existing wells.<sup>24</sup> Consistent with my 2016 memorandum, the UWMP acknowledges that the reductions in agricultural pumping that were projected to occur in the analysis of the Salinas Valley Water Project have not in fact occurred.<sup>25</sup> And as I previously explained, the UWMP acknowledges that additional groundwater management projects may be required to halt seawater intrusion;<sup>26</sup> those projects are not currently committed or funded.<sup>27</sup>

With respect to the North Marina Area, the UWMP discloses that the recent data “may just reveal the groundwater conditions in an area previously lacking in data.”<sup>28</sup> If so, it is evident that the existence of an area of relatively fresher water in the North Marina Area has not in fact retarded the historic advance of seawater intrusion, which has occurred *despite* groundwater conditions in the North Marina Area.<sup>29</sup> In this connection, it is important to understand that the MCWRA seawater intrusion mapping is based on sampling of production wells and represents an advance of the area in which groundwater exceeds the 500 mg/l chloride drinking water standard that can no longer be used for potable water. As the 2015 UWMP reports, MCWD has had to relocate its production wells due to the continuing advance of this seawater intrusion front, and its existing wells remain threatened.<sup>30</sup>

In addition, there is no evidence that the relatively fresher water in the North Marina Area provides any recharge to the Deep Aquifer, from which MCWD pumps groundwater for the Ord community. The Deep Aquifer is increasingly recognized as geologically isolated water without any substantial recharge source.<sup>31</sup> As the 2003 WRIME report and my 2016 memorandum explain, portions of the Deep Aquifer may be recharged through leakage in small amounts by water from the overlying aquifers.<sup>32</sup> To the extent that the Deep Aquifer

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<sup>24</sup> *Id.*, p. 44.

<sup>25</sup> *Id.*, p. 55.

<sup>26</sup> *Id.*

<sup>27</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 7, 26-27.

<sup>28</sup> *Id.*, p. 48.

<sup>29</sup> Hydrological Working Group, Memorandum Responding To Comments On HWG Hydrogeologic Investigation Technical Report, January 4, 2018, p. 7 (“It is questionable how protective these groundwater levels are given the historic extent of seawater intrusion in the project area”).

<sup>30</sup> *Id.*, p. 45.

<sup>31</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 14-17; MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017, p. 54.

<sup>32</sup> Timothy Parker to John Farrow, Technical Memorandum, Oct. 8, 2016, pp. 14-16, citing WRIME, Deep Aquifer Investigative Study, 2003.

is recharged by overlying aquifers, increased pumping of the Deep Aquifer has the potential to induce seawater intrusion in those overlying aquifers.<sup>33</sup>

Sincerely,

A handwritten signature in black ink that reads "Timothy K. Parker". The signature is written in a cursive style with a large, looping initial 'T'.

Timothy K. Parker, PG, CEG, CHG  
Principal Hydrogeologist

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*Id.*

## **RESUME**

***Timothy K. Parker, PG, CEG, CHG***  
***Principal***

### **WORK EXPERIENCE**

**2009 – Present: Parker Groundwater, President/Principal.** Sacramento, California. Privately owned business, specializing in strategic groundwater planning, groundwater monitoring, groundwater modeling, groundwater recharge and aquifer storage recovery projects, program implementation, stakeholder facilitation, groundwater monitoring, policy and regulatory analysis, environmental document review and litigation support. Provides strategic planning, policy consulting and groundwater technical expertise to public and private sector clients to develop effective, sustainable solutions to complex problems in the water and evolving environmental and energy industries.

**2005 – 2009: Schlumberger Water Services, Principal Hydrogeologist.** Sacramento, California. Provided hydrogeologic expertise and project management on groundwater recharge and aquifer storage recovery projects, groundwater monitoring, groundwater resources management, and groundwater contaminant projects for public and private sector clientele. Application of advanced oilfield tools and technologies to groundwater projects. Integration of groundwater quality monitoring and protection on CO2 sequestration projects; liaison to Schlumberger Carbon Services, including planning, scope development, technical implementation, facilitation, and oversight. **Business Development** activities included strategic planning, prospect assessments, sales presentations, targeted workshops, client development and exploitation. Mentored and provided direction to staff; developed, tracked and controlled projects; worked closely with clients and other public and private organizations to implement projects on schedule, on budget with high level of quality.

**2001 – 2005: California Department of Water Resources, Division of Planning and Local Assistance, Conjunctive Water Management Branch, Senior Engineering Geologist.** Provided local technical and economic assistance to Sacramento and San Joaquin Valley groundwater authorities and water districts planning, developing, and implementing conjunctive water projects, groundwater recharge and aquifer storage recovery projects, and local and regional groundwater monitoring programs. Elements include developing technical scope, implementing work, providing geologic and groundwater technical expertise, attending and speaking at public meetings. **Central District, Groundwater Planning Section,** Sacramento, California (early 2001 prior to joining CWMB). **Senior Engineering Geologist, Groundwater Planning Section.** Elements included: Integrated Storage Investigations Program conjunctive use project technical support, coordination, and project management; technical support



on local groundwater monitoring and subsidence programs; technical support on Bulletin 118; Proposition 13 groundwater grant applications screening and ranking process for Central District geographic area. Supervised and provided direction to staff; developed, tracked and controlled program budgets; worked closely with other DWR groups, agencies and outside organizations to develop additional local assistance opportunities for DWR.

**2000-2001: California Department of Conservation, Division of Mines and Geology**, Sacramento, California. **Associate Engineering Geologist**. Responsible for: multi-year aerial photograph review, identification of landslides and potentially unstable areas, field reconnaissance and confirmation, preparation of maps and images using MapInfo, Vertical Mapper, ArcView, Spatial Analyst, Model Builder, and ArcInfo working closely with GIS specialists; assisting in development of GIS methodologies and database for Northern California watersheds assessment/restoration project; review of timber harvest plans and pre-harvest inspections; review of regional CEQA documents as related to engineering geologic issues; watershed assessment; technical presentations at multi-agency meetings and landslide/mass wasting public workshops.

**1997-2000: CalEPA Department of Toxic Substances Control, Stringfellow Branch**, Sacramento, California. **Hazardous Substances Engineering Geologist**. Responsible for: groundwater monitoring and analysis; developing approach and preparing a work plan for a Stringfellow site revised hydrogeologic conceptual model; researching, providing, and maintaining a comprehensive environmental data management system; assembling and contracting with an expert panel for consultation on the site; evaluating an existing MODFLOW porous media groundwater flow model; providing direction on the strategy and approach for the development of a revised groundwater flow and fate & transport model for the Stringfellow site; providing input on an as needed basis in support of the litigation and community relations elements of the project.

**1993 - 1997: Law Engineering & Environmental Services, Inc.**, Sacramento, California. **Manager Project Management**. Responsible for supervising and providing direction to senior project managers; maintaining appropriate tracking system and controls for assurance of successful execution of scope, schedule and budget of major projects; maintaining quality assurance and controls on projects. Responsibilities included development/implementation of group budget spending plan, establishing performance standards and evaluating program progress and quality, staff recruiting, mentoring, maintaining utilization, business development, proposal preparation, commercial and government project marketing, client maintenance. **Project Manager** and **Senior Hydrogeologist** on hydrogeologic evaluations, site and regional groundwater quality monitoring programs, hazardous substance site investigations and remediation. Responsibilities included technical direction of projects, project scoping, schedule, budget, supervision of field activities, preparation of documents, developing cost-effective strategies for follow-on

investigations and removal actions, and negotiating with state regulators on three Beale Air Force projects totaling more than \$15 million.

**1988 - 1993: Dames & Moore**, Sacramento and Los Angeles, California. **Senior Geologist.** Provided hydrogeologic technical support, project management, regulatory compliance, technical/regulatory strategy, and on a variety of commercial and industrial DTSC- and RWQCB-lead hazardous substance sites. Responsibilities included project technical direction, scope implementation, budgetary control, groundwater quality monitoring and analysis, supervision of field investigations, document preparation, client interface, negotiation with regulatory agencies on projects totaling approximately \$5 million.

**1986 - 1988: California Department of Health Services, Toxic Substances Control Division**, Southern California Region, Assessment and Mitigation Unit, Los Angeles, California. **Project Manager** in the Assessment and Mitigation Unit. Responsibilities included development and implementation of work plans and reports for, and regulatory oversight of, State Superfund preliminary site assessments, groundwater quality monitoring and analysis, remedial investigations, feasibility studies, remedial action, and interim remedial measures. **Engineering Geologist.** Provided technical support to Permitting, Enforcement, and Site Mitigation Unit staff, including evaluation of hydrogeologic assessments, groundwater quality monitoring programs, work plans, and reports on federal and state Superfund sites and active facilities; assistance in budget preparation; assistance in zone drilling contract review.

**1983-86: Independent Consultant**, Sacramento, California. Provided technical assistance on variety of geologic and geophysics projects to other independent consultants in local area.

**1982: Gasch & Associates**, Sacramento, California. Geologic assistant conducting shallow seismic reflection surveys in the Sierra Nevada for buried gold-bearing stream deposits.

**1981 - 1982: Geologic Assistant**, Coast Ranges, Avawatz Mountains, White Mountains, and Kinston Peak Range. Geologic Assistant on various geological field studies, including gravity surveys, magnetic surveys, landslide and geologic mapping projects.

#### **PROFESSIONAL REGISTRATION**

California Professional Geologist No. 5594

California Certified Engineering Geologist No. 1926

California Certified Hydrogeologist No. 0012

#### **PROFESSIONAL AFFILIATIONS**

**California Department of Water Resources, Public Advisory Committee, Water Plan Update 2013**

*2010-2013: Appointed to participate on PAC and to lead new Groundwater Caucus*

**Department of Interior, Advisory Committee on Water Information, Subcommittee on Ground Water**

*2010-Present: Member – Work Group for Pilot Project Implementation, Nationwide Groundwater Monitoring Network*

*2007-2010: Co-Chair - Work Group on Implementation for development of the Framework for a Nationwide Ground Water Monitoring Network*

*2007-2010: Member - Work Group on Network Design for development of the Framework for a Nationwide Ground Water Monitoring Network*

**National Ground Water Association**

*2014-Present: Director - Scientists and Engineers Division*

*2007- 2010: Director - Scientists and Engineers Division*

*2007 - 2009: Member - Government Affairs Committee*

*2007 - Present: Chair - Groundwater Protection and Management Subcommittee*

*2005 – Present: Chair - Regional Groundwater Management Task Force, Government Affairs Committee*

*2004 – 2005, 2007,2009-10: Chair – Theis Conference Committee*

*2002 – Present: Member – Theis Conference Committee*

*2002 – Present: Member - Regional Groundwater Management Task Force, Government Affairs Committee*

*2003 – Present: Member – Groundwater Protection and Management Subcommittee*

*2009 – Present: Member - ASR Task Force*

*2009 – Present: Member - Hydraulic Fracturing Task Force*

*2008 – 2009: Member – CO2 Sequestration Task Force*

**American Ground Water Trust**

*2009 – 2012: Chair*

*2005 - 2013: Director*

**California Groundwater Coalition**

*2007-Present: Director*

**Groundwater Resources Association of California**

*2000 – Present: Director*

*2000 – 2001: President State Organization*

*2001 – Present: Legislative Committee Chair*

*1998-1999 Vice President*

*1996-1997 Secretary*

*1995-1996 President Sacramento Branch*

*1993-1994 Member-at-Large Sacramento Branch*

**ACADEMIC BACKGROUND**

*BS 1983, Geology, University of California, Davis*

Graduate studies in hydrogeology, hydrology, engineering geology, waste management engineering

***Selected Publications***

*California Groundwater Management, Second Edition*, Groundwater Resources Association of California, co-author and project manager, 2005.

*Water Contamination by Low Level Organic Waste Compounds in the Hydrologic System*, in *Water Encyclopedia*, Wiley, 2004.

*Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration*, Water Research Foundation, co-author, 2009.

*Aquifer Storage and Recovery in the US, ASR 9*, American Ground Water Trust, Orlando Florida, September 2009 – a compilation of key ASR issues on DVD, contributing editor and speaker, 2010.

*Sustainability From The Ground Up – Groundwater Management In California – A Framework*, Association of California Water Agencies, principal author, 2011.

*ISMAR9 Call to Action: Sustainable Groundwater Management Policy Directives*, Principal Author, 2016.